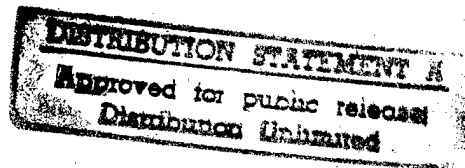


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JPRS-UEA-84-018

17 August 1984



# USSR Report

ECONOMIC AFFAIRS

EKO: ECONOMICS AND ORGANIZATION  
OF INDUSTRIAL PRODUCTION

No. 4, April 1984

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17 August 1984

USSR REPORT  
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## ACHIEVEMENTS OF COAL INDUSTRY IN KUZNETSK BASIN OUTLINED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 84 pp 3-23

[Article by V. E. Popov, doctor of economic sciences, chief of laboratory for economic prognostication of the Institute of Economics and Organization of Industrial Production of Siberian Branch of the USSR Academy of Sciences, K. M. Zvyagintseva, candidate of economic sciences, and A. P. Kuz'min, candidate of technical sciences (Kemerovo): "The Share of the Kuzbass"]

[Text] The coal industry in the Kuzbass has achieved a good deal of success in the past 15-20 years. New mining enterprises, mines and pits have been put into operation, such as the Raskadskaya, the largest mine in the country, and so forth. Technical equipment and technology for extraction are being improved, and mining enterprises in the basin are undergoing technical renovation. The Sibir' coal enriching factory has been put into operation. Coal extraction in the basin has increased from 81.4 million tons (1960) to 148.5 million tons (1982).\* The overall share of the Kuzbass in the country's energy potential has been steadily increasing.

There is Something to be Proud of

When changing over from manual to mechanized extraction during the period of the establishment of the Kuzbass, the labor productivity of the miners increased from 21.3 tons a month (1928) to 43.1 tons (1940). The application of mining combines and the first steps toward open-pit mining increased productivity to 53.5 tons per month (1960). In 1982 output in the basin had reached 87 tons a month (60 tons from underground work and 251 tons from open-pit mining). A key role in increasing labor productivity in underground work was played by the spreading of mechanized complexes, and in open-pit mines -- the use of powerful excavators and means of transportation. The effectiveness of extracting coal by the underground hydraulic method was proved. Technology for enriching coal progressed.

\*Figures from the USSR Ministry of the Coal Industry. Additionally, up to 5 million tons of coal are extracted in the Kuzbass by enterprises of the local coal industry.

A good deal has been done for the nonindustrial infrastructure. From year to year miners of the Kuzbass receive more and more housing, kindergartens, schools and hospitals. Measures are being taken for protection of the environment, and areas damaged by mining work are being recultivated. The geological study of the Kuzbass has improved. This is the result of the self-sacrificing labor of an army of workers, technicians and engineers of the basin. Past decades have been marked by glorious achievements of workers of the Kuzbass, among whom are twice Hero of Socialist Labor G. I. Drozdetskiy, Heroes of Socialist Labor G. N. Smirnov, V. G. Devyatko and A. F. Nikitin, outstanding masters of coal mining in open-pit mines I. D. Yakovlev and V. G. Dubinets, the eminent tunnel drillers A. P. Titov and M. S. Vegner and many other masters of mining.

Regardless of how significant the successes of the Kuzbass may be, it has still not managed to reach the earmarked level of extraction or to complete a number of other responsible tasks. From 1979 through 1982 the extraction of coal here did not increase (148.1 and 148.5 million tons). During 1985 it is intended to mine 162 million tons of coal, but Kuzbass will be doing well to reach the 150 million mark.

In 1980 the CPSU Central Committee and the USSR Council of Ministers adopted a detailed decree which earmarked the basin's tasks both for the extraction of coal and for the construction and renovation of mining enterprises, and it listed measures for assisting the basin. But there is still a good deal of work to do to implement the decree.

Indicators of output-capital ratio are deteriorating. When coal is being extracted both in the mines and in the open pits there are frequent violations of the rules of mining work. The proper amount of attention is not always devoted to environmental protection. Plans for housing and socio-cultural construction are sometimes not fulfilled.

The main reason for the failure on the part of the Kuzbass mining industry to fulfill its commitments, as first secretary of the Kemerovo CPSU Obkom, L. A. Gorshkov, noted at the 26th CPSU Congress, is that during the past 20 years construction has not been started on a single new mining enterprise.\* The third year of the five-year plan has come to an end and the situation has not changed.

Let us turn to the role of the Kuzbass in the country's fuel and energy complex, the tasks facing it, and the situation in which the basin finds itself at the present time.

#### The Kuzbass in the Fuel and Energy Complex

Of the country's coal basins, 54 percent of the coal mined comes from the Donets, Kuznetsk and Kansk-Achinsk basins. In the future they will provide no less than 65-70 percent of the coal extracted in the Union.

\*26th CPSU Congress, stenographic report, Vol 2, Moscow, Politizdat, 1981, p 45.

It was assumed that the Donbass would increase its annual extraction of coal to 280-300 million tons. But in 1976 it reached its ceiling at 225 million tons and the volume of extraction began to decrease; in 1982 the extraction of coal decreased to 200 million tons. Mining and geological conditions in the basin are regularly deteriorating, mainly because of the working of the upper layers and the need to go deeper. The average depth of the mines in the Donbass has reached 605 meters, while in the Kuznetsk basin it is 283 meters. In the future about 70 percent of the coal will be extracted in the Donbass from a depth of more than 700 meters, and one-third of it -- deeper than 1,000 meters. It is expected that the ash content in the high energy coals of the Donbass will increase to 30 percent and more. The Donbass will undoubtedly play an important role in the fuel and energy complex for many long years. But extremely large capital investments will be needed, even to maintain the present level.

The geological supplies of brown coal in the Kansk-Achinsk basin, which are suitable for extraction by the open-pit method, make it possible to extract several hundred million tons of coal annually in the future.

At one time half of the coal mined in the Kansk-Achinsk basin was to be utilized in Siberia, and the other half was to be transformed into electric energy locally and sent along superpowerful electric power transmission lines to the European part of the country. At that time one could not see the broad possibilities that have now been revealed for providing energy for the central regions from atomic electric power stations, and people paid no attention to the prospects of comprehensive processing of Kansk-Achinsk coals or the creation of an artificial liquid fuel industry which can consume up to half of the coal in the basin. It became clear, finally, that, because of ecological considerations, in the western part of the KATEK one could place not 12 large electric power stations as was intended, but much fewer: only two or three. And transferring the energy-intensive industries to Siberia, in keeping with the decisions of the 26th Party Congress, means utilizing all of the electric energy of the KATEK locally. All this forces us to return to the resources of the Kuzbass again and again.

The Kuzbass has travelled a long path in its development, has accumulated a considerable supply of mines and pits, has a relatively ramified production and social infrastructure, and depends on skilled personnel who live there. But the main thing is its possibility of further stable growth.

Of the geological supplies of coal in the Kuzbass, there are 265 billion tons suitable for economic assimilation -- a fairly large proportion of the coal of this category. Until recently the maximum level of extraction in the Kuznetsk basin was estimated at 300 million tons, of which 200 million tons will be needed for coking and 100 million tons will go for energy needs. Since the extraction of energy coal in the Kuzbass is already approaching 100 million tons, it is thought that the basin is promising only for coking coal, but not for high energy coal. In the 1970's geologists of the Zapsibgeologiya association, in conjunction with associates of the Institute of Economics and Organization of Industrial Production of the Siberian Branch of the USSR Academy of Sciences conducted a re-evaluation of the possibilities of annual

extraction of coal in the Kuzbass. It has now been determined at 500-550 million tons a year. Thus, in addition to the coking coal needed by ferrous metallurgy, the Kuzbass will be able to produce up to 300-350 million tons of high-energy coal.

Only 10-12 percent of the coal-bearing area is now being utilized in the Kuznetsk Basin. With the extraction of 300 million tons of coal a year, 30-35 percent of it will be occupied, and when the maximum level is reached -- 60-65 percent. Consequently, even then the Kuzbass will have reserve areas to maintain over the long range the scale of extraction that has been reached.

The re-evaluation essentially increased the ideas about the role of the Kuzbass in the fuel and energy complex as the largest supplier not only of coking coal, but also of energy fuel. While previously it was oriented toward the needs of Siberia and the Urals, now, the European part of the country will be the main consumer of Kuznetsk fuel. In a certain sense it will replace the Donbass. Without taking this into account one cannot understand the position and tasks of the Kuznetsk Basin or its future significance in the fuel and energy complex and the country's economy.

Mining has been started in only 14 of the coal regions of the Kuzbass. Of special interest are those where in the next decade it will be possible to considerably increase the extraction of both coking coal and energy coals under favorable mining and geological conditions.

The main suppliers of coking coals of kinds that are in short supply are Prokop'yevsko-Kiselevskiy and Tomusinskiy rayons. Leninskiy and Yerunakovskiy rayons can deliver, in addition to mass supplies of energy fuel, a good deal of oil- and gas-bearing coking coal. Yerunakovskiy Rayon is especially interesting. Suffice it to say that its geological supplies constitute 73 percent of the supplies of the Donbass. Moreover, most of the mining here can be conducted by the open-pit method in large pits. So the region requires a long-term comprehensive program for assimilation with priority development of the production and social infrastructure (roads, housing and so forth). If the region were oriented toward hydraulic and open-pit extraction, it could reach a labor productivity of 400-500 tons per month. Unfortunately, they are already beginning to assimilate it without the proper system, which will inevitably be reflected in the effectiveness of the development. The time has come to put a stop to the negative tendencies.

#### Coal for Coking

Since the time of the creation of the Uralo-Kuznetsk combine, the main task of the Kuzbass has been to deliver coal for coking to the national economy. During prewar years Kuznetsk coking coal was sent to plants of Siberia and the Urals. Later they began to ship it to Kazakhstan and regions of the Center, and recently have been shipping it to plants of the first metallurgical base, the Donbass region.

Coke from Donetsk coal is more solid than that from Kuznetsk coal. But the delivery of Kuznetsk coal to plants of the Ukraine will apparently increase,

and here is why. The upper layers of the Donbass have been worked, and it is necessary to dig deeper. In addition to this, improvement of the quality of the metal presupposes a reduction of the sulphur content in the furnace charge. And Kuznetsk coal has one-fourth the quantity of sulphur of Donets coal. Many years of attempts to develop effective methods of removing sulphur from coal have not produced the expected results. Consequently, it is necessary to use naturally pure coals more extensively.

The price of metal depends largely on the production cost of the coke. Even taking transportation expenditures into account, Kuznetsk coking coal is less expensive than Donets coal at plants of the South. The Donbass remains an important source of coking coal, but it can no longer deliver it in the previous quantities.

There are large supplies of coking coal in the Pechora basin. But it is mainly soft coal, which is extremely similar to the Kuznetsk gas coal (rank G<sub>17</sub>), but it costs 1.5 times as much.

Karaganda coking coal has a high ash content and is difficult to enrich. It can be used only in a mixture with Kuznetsk coal which has less ash. Considerable supplies of fat coking coals are concentrated in the Ulugkhem Basin of the Tuva ASSR. But the assimilation of this basin is a project for the future.

This is why it is the Kuzbass that is becoming the main fuel base for ferrous metallurgy. This is the more justified since more than half of the coking coal that is suitable for economic assimilation is concentrated there.

It would seem that the extraction of coking coal in the Kuzbass, even on a small scale, poses no difficulties. But this is not so. The fact is that up to 45 percent of the overall supplies of coking coal in the basin is gas coal, whose proportion in the charge of metallurgical plants of the East does not exceed 20 percent. The largest part of their charges is made up of coking coal and soft coal, whose extraction is fraught with many complications.

The situation with soft coals can be improved, along with renovating existing mines, by constructing new ones, including the Kelovskaya, Nikitinskaya, the Antonovskaya hydraulic mine and others. At the same time it is necessary to expand the range of coals that are used for coking, primarily with gas coals. The solution to this problem with the present technology of layer coking can be seen primarily in selective pulverization of the charges and their thermal processing.

But a radical solution to the problem means a changeover to formed coke. More than 25 years ago a corresponding member of the USSR Academy of Sciences, L. M. Sapozhnikov, Doctor of Technical Sciences G. V. Speranskaya and their associates developed a principally new technology for obtaining metallurgical coke from gas and certain other poorly caking coals without using ranks that are in short supply. While the coke from the best Donets coals has a durability (according to the Sungren cylinder) of 340-350 kilograms, formed coke from poorly caking coals has 400-410 kilograms. The proportional capital

investments in the production of formed coke are 30-35 percent higher, but the production cost and extra expenses are lower than with the previous technology.

The major economic effect from the new technology is a considerable expansion of the raw material base of the coke chemical industry. Moreover, even the academician I. P. Bardin predicted that the use of formed coke would increase the productivity of blast furnaces by 15-20 percent.

An experimental industrial installation for obtaining formed coke was put into operation 20 years ago in Kharkov. It made it possible to do smelting in large blast furnaces with formed coke, which proved the high effectiveness of the new technology. But the Ministry of Ferrous Metallurgy was in no hurry to organize the production of formed coke, passing the problem of the raw material base off on the coal miners. The long-range plans for coke chemistry include certain changes not only for improving the technology of layer coking, but also for producing formed coke. Such installations will soon appear in the Donbass. The utilization of Donets gas coals for obtaining formed coke will make it possible to reduce the amount of Kuzbass coking coals which are in short supply that are brought into the Donbass. And this is only the beginning. A large part of the coking batteries have already gone beyond the amortization period and need to be replaced. It would not be a bad idea, for instance, at the end of this decade to replace the old batteries with new installations for producing formed coke.

#### Coals for Energy Engineering

Seven-tenths of the country's population is concentrated in the European part of the country, and more than two-thirds of the boiler fuel is consumed there. Even in view of the prospects of nuclear energy and the utilization of natural gas and fuel oil, coal will remain an important kind of fuel, in the first place, for electric power stations, and, in the second place, for a large group of industrial and municipal boilers and household consumption. Until quite recently consumers of the European part have managed to do without coal from the Donets, Moscow and other basins of these regions of the country. Now the situation has become more complicated. The extraction of high-energy coals has decreased in the Donbass, and it is being curtailed in the Moscow basin. There is now a need to deliver transportable, high-calorie coals from the Kuzbass to the European part of the country.

But this is not all. As calculations show, even now the cost of Kuznetsk coal, including shipment to the European part, is 4-5 rubles less than Donets coal. When 100 tons of high-energy Kuzbass coal is shipped beyond the Urals, the annual savings thus reaches 400-500 million rubles. Replacing 100 million tons of Donets coal with coal from the Kuzbass in the European regions of the country will make it possible to save at least 800-1,000 million rubles' worth of capital investments which are intended for renovation and construction of new mines in the Donbass. It is hardly expedient to ignore such possibilities.

Expansion of the shipment of Kuznetsk coals into the European part of the country would solve another important problem. Several tens of millions of tons of fuel oil are burnt there in electric power stations. If 30 million tons of Kuznetsk coal were sent to replace this fuel oil it would be possible to release no less than 15 million tons of fuel oil. It could be used for producing engine fuel and chemical products, or else for export, which could provide 1.3-1.5 billion rubles in foreign currency.

Now up to 40 million tons of high-energy Kuznetsk coal is used in Siberia. KATEK will make it possible to limit the consumption of Kuznetsk coals by Western Siberian energy engineering. All-around limitation of the consumption of Kuznetsk coal in Siberia should be envisioned as a kind of reserve for increasing deliveries to the European part. A fairly large amount of Kuznetsk coals in Siberia could be replaced by an equal amount of coal from the Minusinsk basin. Expansion of the extraction in this basin to approximately 40 million tons would crowd out a considerable quantity of Kuzbass coal from Western Siberia.

#### Extraction of Coal by the Open-Pit Method

Supplies of coal for open-pit extraction in the Kuzbass are estimated at 15 billion tons, of which at least one-third will go for coking coal. The Kuzbass is the only basin in the world where the open-pit method can be used for extracting coal not only for energy, but also for coking.

The peculiarities of open-pit work in the Kuzbass include the diversity of mining conditions. While in the Kansk-Achinsk and Irkutsk basins the stripping rocks are mainly loose deposits, in the Kuzbass they are strong, deep-lying rocks which, as a rule, require special drilling and explosive work. While in the Kansk-Achinsk basin the coefficient of stripping is about 2 cubic meters of rock per 1 tons of coal, in Irkutsk it is 2.5 and in Ekibastuz it is 0.8, in the Kuzbass it exceeds 5 cubic meters per ton. But even under these conditions, labor productivity in the Kuzbass exceeds that in the other mines 2-3-fold, and the cost of extraction is two-thirds - one-half.

From 1960 through 1982 the number of coal beds being worked in the Kuzbass increased from 12 to 20. The extraction of coal by the open-pit method increased from 15.5 million tons a year to 54.9 million. Labor productivity increased from 219 tons to 251 tons a month per miner.

With proper assistance, in the foreseeable future, with good technical and economic indicators, open-pit extraction of coal in the Kuzbass could be increased at least to 140-150 million tons, and in the more distant future -- to 200-220 million tons. Unfortunately, coal is now being extracted from the mines "at any price," to the detriment of normal organization and the technology for conducting mining work. Stripping work regularly lags behind in the mines, as a result of which the prepared supplies of coal in the Kemerovougol' association decreased during 1980-1982 from 2.9 million tons to 1 million tons.



In January 1983 at 12 of the 20 mines that were ready for extraction of the coal there was only enough work for 1.5 days. Difficulties in mining work lead to violations of safety techniques, the entail irregular working of the mines and idle time of equipment, and they worsen the technical and economic indicators.

The Ministry of the Coal Industry is allotting the Kuzbass a large quantity of highly productive new technical equipment for raising the technical level. About 600 excavators are used for the main technological processes, including 285 large-capacity excavators with a shovel size of 10-40 cubic meters. More than 1,000 industrial trucks with capacities of from 27 to 120 tons, more than 300 locomotives, 2,146 dump carts and other equipment are being used in the mines.

But the utilization of the technical equipment leaves something to be desired. The integral coefficient of the utilization of excavators in 1982 amounted to only 22 percent. Their nonplanned idle time increased to 650,000 hours a year, which is tantamount to the annual idle time of 75 excavators and the loss of 100 million cubic meters of stripping. During 1980-1982 the productivity of BELAZ-548 automatic dump trucks decreased by 14 percent, and of the BELAZ-540 -- by 24 percent. Up to 30 percent of the registered stock of bulldozers and tractors are always idle in the mines of the association.

The main reason for the unsatisfactory utilization of costly equipment is the poor provision of spare parts. The demand for the services of the repair plants and shops is steadily increasing. But the capacities of the repair base cannot satisfy the demands of the mines, either quantitatively or qualitatively. Because of the large loads and the unsatisfactory servicing, in 1983 immediate capital repair was required for 60 excavators, 80 bulldozers, 30 drilling machines and a good deal of other equipment.

The four repair plants of the association are capable of satisfying only 20 percent of the need for repair work. The equipment of the plants themselves is extremely obsolete and needs to be replaced. In terms of existing norms the repair area is too small by 130,000 square meters. A considerable part of the stock of machine tools should be replaced.

While the mines have plenty of powerful technical equipment, there is a shortage of equipment of average and small capacities, particularly trucks with capacities of 5-12 tons. As a result, heavy dump trucks are used to transport small cargoes, without the proper effect.

In the coal formations, in addition to large deposits, there are thin layers of coal which are not being worked at the present time. The coal is taken to the dumps along with the stripping rock and then it is lost. Scientific organizations have developed a technology for extracting the coal from the stripping rock, and it has undergone experimental testing, but it is not being introduced yet. This apparently has to do with the fact that in the reports of the association, according to the methodology of the Ministry of the Coal Industry, in general such losses are not taken into account.

Such circumstances cause special alarm. In order to force extraction of coal in mines that are operating according to the complex nontransport system, stripping rock, which should be taken to distant dumps, piles up for years in the working fronts. Because of violations of the rules for operation, more than 320 million cubic meters of mining rock have accumulated on the work fronts of the mines. Without removing the rock it is practically impossible to continue normal working of the mines. And in order to remove it, it is necessary either to stop work for many months and deal with the removal of the rock or to take other measures which require a large quantity of excavators, means of transportation and financing.

#### Extraction of Coal in Mines

In spite of the considerable development of coal extraction by the open-pit method, the main source of coal, especially coking coal of grades that are in short supply, are the mines. From 1960 through 1982 the extraction of coal by the underground method increased from 66 to 97.9 million tons.

The technical re-equipment of the Kuzbass mines, including the application of mechanized cleaning processes, has had a positive effect on labor productivity, the output of the cleared face, and the increased extraction of coal. The extensive introduction of the complexes began at the end of the 1960's. In 1982 205 mechanized complexes were in operation in the Kuzbass. In mines of the Kuzbass 54.9 million tons of coal or 56 percent of the amount extracted from mines came from faces that were cleared with comprehensive mechanization.

The mining complexes have contributed to the achievement of high indicators of labor productivity. Thus in the Zyryanovskaya mine the complexes provided for the output of 150 tons a month per miner, and in the Raspadskaya mine -- 152 tons. Specialists think that, as a result of improving the complexes, their application in the proper mining and geological conditions can produce a monthly output in the mines of 180-200 tons, but the complexes can be used only in a relatively limited range of mining and geological conditions. They produce the proper effect in beds that are gently sloping or slightly inclined and are 1.5-3.5 meters deep, without shallow folds and disjunctures and without solid occlusions (pyrites). Such conditions do not exist in all coal regions of the Kuzbass. As before, only 20-25 percent of the coal in the basin is suitable for the use of the complexes. In the future, as the mines become deeper, the use of mechanized complexes will be curtailed.

One cannot but note that the complexes are distinguished by their great weight, they are fairly complicated, and they require considerable expenditures on assembly, disassembly and repair. While initially the weight of a complex was 200-300 tons, now it has increased to 1,500 tons with a tendency toward further increase. The actual operating time of the complexes is 20-30 percent on beds that are gently sloping, and 18-20 percent on beds that are inclined.

The Kuzbass is distinguished by a diversity of mining and geological conditions, which require various means of mechanization of labor. But up to

this point the basin has no effective means of mechanizing the working of beds with a steep or sharp drop. While the application of mechanized complexes makes it possible to reach the level of monthly output of 150 tons and more per miner, in places where there are no effective means of mechanization, such as, for example, in the mines of the Prokop'yevsko-Kiselevskiy deposit with their sharply dropping beds, the monthly output is only 30-40 tons.

The Institute of Mining imeni A. A. Skochinskiy, in conjunction with other organizations, has been working for more than 15 years on a plan for a mine with a new technological level where labor productivity exceeds the average for the Donbass 8-10-fold. Its creation is intended for as early as the middle of the 1980's. But so far this undertaking has not produced appreciable results. There is no more talk of creating the "mine of the future" in the Kuzbass.\* Still, the future of the Kuzbass is related not only to improvement of existing technology for underground mechanical extraction, but also to a consistent changeover to hydraulic extraction of coal.

A peculiarity of mining enterprises is that they regularly move to lower layers, which makes reconstruction necessary. In a normal situation the building of supports precedes the workers, which makes it possible to develop mining work rapidly and efficiently.

Of the 68 mines in the basin, 29 are being renovated now. The actual time period for renovation are frequently longer than planned. The delay in the renovation makes it necessary to move to the lower levels with the less effective method -- slanting fields. In 1982 37 percent of the coal in the Gidrougol' association was mined from slanting fields, in the Yuzhkuzbassugol' association -- 47 percent, in the Leninskugol' association -- 85 percent, and so forth. Moving to lower levels worsens working conditions, increases the danger of mining work, lengthens the distances over which people and coal must be sent, makes the ventilation of the mining fronts more difficult, and, in the final analysis, reduces labor productivity and increases production costs. And there is still a need to install vertical supports at lower levels. So the expenditures are essentially doubled.

The Kuzbass has great possibilities of increasing underground extraction and increasing its effectiveness as a result of bringing order into the existing mines and constructing new ones, primarily in regions with favorable mining and geological conditions.

#### Enriching Coal

One can judge the effectiveness of enriching coal in the Kuzbass from the figures in the table (for 1982).

In the Kuznetsk basin there are 25 enriching plants (OF) which process 45.5 percent of the coal that is extracted, including all the coal for coking.

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\*Kuz'mintsev, V. "Remembering the Future," PRAVDA, 3 July 1983

The construction of new plants is lagging behind the plans. The Raspadskaya TsOF which was just started up in 1983 has been closed down temporarily. Construction has not been started on the Inskaya and Tyrganskaya OF's. The renovation of existing plants is behind schedule.

Table.

	Kuzbass	Donbass	Karaganda	Pechora
Ash content in				
processed coals, %	19.7	28.2	30.1	24.5
Output of concentrate, %	72.0	58.0	47.1	41.9
Ash content of concentrate, %	8.2	10.3	16.4	16.7

Practically all of the plants are in a difficult position because of the weakness of the repair base, which did not receive the proper attention when the enriching industry was being created in the Kuzbass. The question of a specialized repair base for enriching plants of the Kuzbass has been raised repeatedly, but so far it has not been resolved. Since the coal enriching industry will have to take large steps in its development in the near future, the repair problem is becoming even more crucial.

#### Solving Social Problems More Rapidly

During recent decades considerably more attention has been paid to social problems related to the development of the Kuzbass. The USSR Ministry of the Coal Industry is drawing up plans for the social development of the coal basins, including the Kuzbass. Such plans are also being drawn up for associations and for individual mining enterprises, producing an appreciable effect, as a rule.

But in spite of the obvious successes, the social development is lagging behind the growing demands of the miners. Plans for housing construction are not being fulfilled. In 1981 the plan for the startup of housing for coal miners of the Kuzbass was fulfilled by 77 percent, and in 1982 -- by 82 percent. Since the plans themselves are oriented not so much toward the needs and toward the limited possibilities of construction organizations, these indicators seem even more inadequate.

In the Kuzbassugol' VPO alone several tens of thousands of workers and employees have a critical need for housing. In 1983 it will be necessary to tear down individual residences in Kuzbassugol' because they are holding up mining work in the area where they are located. But the real possibilities of tearing them down are more than limited. Resolutions that were made previously to move part of the residences of Prokopyevsk to a noncoal area are slow in being implemented.

The failure to fulfill plans for housing construction is exacerbated by the even greater arrears in the construction of facilities for socio-cultural purposes.\* Thus in 1982 the plan for public education facilities was fulfilled by 63 percent, and for cultural facilities -- by 54 percent.

Mining cities and large villages have general plans for development. But they are frequently built up in violation of the plans. New residential microrayons are not built up comprehensively: the construction of schools, children's combines and trade and service enterprises lags behind the release of housing. They are not satisfactorily provided with hot and cold running water and the construction of purification installations is in arrears. Roads joining enterprises to residential regions are in unsatisfactory condition.

The USSR Ministry of the Coal Industry is not allotting the necessary funds even for such routine tasks as the provision of new regions with running water, sewerage, heating and roads. The planting of greenery in the miners' cities and villages is considerably behind the established norms.

The wage level is quite important in retaining personnel. A regional coefficient of 1.25 has been established for Kuzbass miners. But the Ministry of the Coal Industry plans the average wage so that even with the coefficient, in the Kuzbass it is only 2.3 percent higher than in the Donbass (1982).

#### The Efficiency of the Kuzbass Coal Industry

Is the development of the Kuzbass not being retarded by its poor efficiency? Here it is useful to compare it with the other large rock coal basin -- the Donets. The first thing is the possibility of increasing the amount of extraction. As was noted, the Donbass has reached its maximum and with great efforts is keeping it from the inevitable gradual reduction.

As for the Kuzbass, if the proper attention is paid to it the extraction of coal could approximately double in the foreseeable future, and in the more distant future, as was noted, it could reach 500-550 million tons.

Labor productivity is a decisive indicator of effectiveness. Labor productivity in the Kuznetsk basin is 2.5 times as high as in the Donets basin (87.3 as compared to 33.3 tons a month). During 1970-1981 in the Kuzbass it increased by 16 tons a month, and in the Donbass it decreased by 5 tons.

The Kuzbass has large reserves for further increasing productivity. The application of new technical equipment in the mines -- excavators with shovel capacity of 20 cubic meters and more, dump carts with lifting capacity of 160 tons and more, dump trucks with capacities of up to 120-180 tons -- makes it possible to count on an output of 350-400 tons per worker at existing mines, and 400-500 tons per worker at new ones. Since by the end of the century the proportion of open-pit mining will approach half of the overall extraction of coal in the basin, the increased output in the mines will have a strong influence on the overall level of labor productivity in the basin.

\*PRAVDA 6 October 1983

Improvement of the technology for underground mechanical extraction promises to increase labor productivity in the mines to 150-160 tons a month per worker by the end of the century. Hydraulic extraction of coal constitutes a reserve for increasing labor productivity. Productivity in hydraulic mines is at least twice as great as in underground mechanical mines, and in beds with a gentle slop -- 3 times as great. After renovation, the Yubileynaya mine will reach a level of output of 250-300 tons a month, and the Antonovskaya which is earmarked for construction will reach 400 tons a month. The VNIIGidrougol' institute has developed scientific fundamentals of hydrotechnology with labor productivity of about 500-600 tons, that is, on a level with open-pit mining work. With proper development of open-pit and hydraulic extraction, labor productivity in the basin as a whole could reach 250 tons by the end of the century.

Because of the high labor productivity, the cost of extracting coal in the Kuzbass is half as much as in the Donbass. By the end of the century the difference in favor of the Kuzbass will be even greater.

The coal industry is one of the capital-intensive branches of industry, which frequently retards its development. Considerable amounts of money are spent on maintaining the mining fund. In the Kuzbass 1.5-2 rubles per ton of annual capacities are spent for these purposes each year, and in the Donbass -- 6-7 rubles. Renovation of existing mines costs one-half to two-fifths as much as it does in the Donbass. With equal capital expenditures on the construction of new mines and pits, it is possible to obtain approximately three times as much coal in the Kuzbass as in the Donets basin. In the final analysis, in the next 18-20 years, in order to double the extraction of coal, the Kuzbass will require approximately two-thirds of the capital investments which will be needed for the Donbass to maintain today's level of extraction.

#### What Comes Next?

How did it happen that one of the best rock coal basins in the country in terms of mining conditions, level and possibilities of increasing labor productivity is not fulfilling government assignments, has remained at the same level of extraction for many years, has not expanded the mining area for more than 20 years, is severely behind in the fulfillment of plans for renovation, and is operating with extreme strain on its forces?

In addition to certain objective factors, the main reason is apparently the fact that the Ministry of the Coal Industry, with the knowledge and agreement of the USSR Gosplan, has tried to take as much as possible from the Kuzbass and to give it as little as possible, that is, it has placed current, immediate interests over basic, long-range interests. A well known, although indirect confirmation of this point is the fact that during 1970-1980 the extraction of coal in the Kuzbass increased by 27 million tons, and in the Donbass it decreased by 19 million. During this time the Kuzbass received 17 percent of capital investments allotted by the Ministry of the Coal Industry, and the Donbass received 44 percent.

No small amount of harm was caused to the basin by the organizational rearrangement of the management which was carried out by the Ministry of the Coal Industry. The rearrangement plagued the basin for more than 10 years and led to an inflation of the administrative staff. In the end it was necessary to return to the old arrangement with slightly updated forms.

But what is necessary in order to overcome the arrears and place the Kuzbass on the high road?

Let us recall the clear statement of the problem at the June (1983) Plenum of the CPSU Central Committee: "In the economic sphere the key problem is a radical increase in labor productivity." The Kuzbass has everything necessary for solving this key problem if attention is paid to the basin and it is given the necessary assistance.

The main condition for overcoming those difficulties and negative tendencies which have held up the development of the Kuzbass during the past 20 years is the strengthening of its construction base. At one time the basin has such a base in the system of the USSR Ministry of Construction of Heavy Industry Enterprises. On the insistence of the Ministry of the Coal Industry, the construction base was transferred to its jurisdiction. There were 15 brigades of skilled shaft builders working in the Kuzbass, while now there are only three and they are comprised of neophytes. In order to strengthen the construction base of the Kuzbass, in the next few years the number of builders should be increased by at least 10,000-15,000.

The industrial base for mine construction is lagging behind the needs of the Kuzbass. It has practically not developed since being transferred to the Ministry of the Coal Industry. Because of the shortage of personnel and the poor specialization in the various items on its list, its capacities are not being fully utilized. For the output of reinforced concrete items it uses only 67 percent of its capacities, the output of glass materials -- 86 percent, concrete mixtures -- 55.4 percent, and parts for large-panel housing construction -- 60.6 percent. But even if it were completely utilized, the base could not cover the needs of the mine builders.

Certain workers of the Ministry of the Coal Industry give the weakness of the construction base as a reason for not accelerating the development of the Kuznetsk basin.

Expansion of the construction base is the main condition, but not the only condition for the dynamic development of the Kuzbass. Overcoming difficulties with personnel and providing the workers with housing are of principal significance.

Without housing, new mines cannot be put into operation. In order to assimilate the deposits in Yerunakovskiy Rayon, it will be necessary to have a new supply of housing with the complex of schools, hospitals, clubs and so forth.

The high level of mechanization of mining and construction bases and the constant augmentation of mines and pits, enriching plants and construction sites with new mechanisms can produce the expected result only with efficient utilization of them, which presupposes expansion of the repair base which has clearly fallen behind. In addition to renovation of existing repair and mechanics plants, it is necessary to construct new ones in the Kuzbass.

Although coal mining is increasingly shifting to Siberia, mining machine building is concentrated mainly in the European part of the country. Just the delivery of mining equipment over a distance of several thousand kilometers annually costs 25-30 million rubles, and in the near future it will cost even more. Moreover, machines and equipment delivered to the Kuzbass, especially mining complexes, as a rule, are not adapted to local conditions, and they have to be finished locally. But only one of the plants for mining machine building earmarked for construction in the next two decades will be located in Siberia. The interests of the matter obviously require a different ratio.

Many of the products of Kuzbass mining machine building plants are shipped beyond the Urals. Reducing these shipments is one more reserve for strengthening the machine building base of the coal industry in Siberia.

Since the Kuzbass is being increasingly oriented toward the needs of the European part of the country, the proper amount of attention should be given to the transportation of coal from the East to the West. The existing mainline can no longer handle this task. Some people think that building a new railroad for shipping coal west will cost almost 18 billion rubles. This figure reliably frightens people away from the idea of developing the Kuzbass. But in reality they are renovating the Central Siberian Mainline, which will make it possible to ship at least 100-150 million tons of coal from Siberia. Costs of renovating the road will apparently not exceed 1.5-2 billion rubles. At the same time one must work on the question of organizing water transportation of Kuznetsk coal beyond the Urals.

A number of demands are being made on planning and research institutes. Besides solving important, but particular problems of improving technology of open-pit mining, underground-mechanical and hydraulic extraction, and also enrichment of coal, we must think about joining forces for developing a comprehensive plan to develop the Kuzbass coal industry up to the year 2000 and an enlarged plan up to the year 2020 as part of the USSR Energy Program.

The tasks of the fuel and energy complex and the interests of the national economy insistently require that more attention be paid to the Kuzbass, mainly by the Ministry of the Coal Industry and the USSR Gosplan. Only then, having overcome the negative tendencies, will the Kuznetsk basin be able to increase the efficiency of the coal industry and provide high-quality coal not only for Siberia and the Ural area, but also for the European part of the country.

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## ROLE OF COMPETITION IN SOCIALIST ECONOMY DISCUSSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in  
Russian No 4, Apr 84 pp 24-25

[Introduction to articles that follow: "Competition: New Tasks"]

[Text] More than 94 percent of the workers in the national economy are participating in competition. The directions for their efforts are earmarked in the decree of the CPSU Central Committee "On Improving the Organization and Practice of Summing Up the Results of Socialist Competition and Encouraging Its Winners" (September, 1983). These include more effective utilization of the production potential, more rapid introduction of the achievements of science and technology, development of the labor and social activity of the workers and, on the basis of this, ensurance of further strengthening of the country's economic and defense might and improvement of the national well-being.

In order to carry out these tasks successfully, it is necessary, in addition to other measures, to conduct further theoretical development of the principles of competition and to improve the practice of its organization. In the articles published below an attempt is made to answer certain questions.

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## IMPORTANCE OF ECONOMY IN COMPETITION STRESSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 84 pp 25-34

[Article by V. K. Fedinin, doctor of economic sciences (Moscow): "Orienting the Competitors Toward Economy"]

[Text] The forms of competition are in a condition of continuous development. They also, naturally, reflect the peculiarities of each period in the history of our national economy. For a long time the economy developed extensively and the production of material goods increased, with an increase in material resources that corresponded to it and sometimes outpaced it. It was then that socialist commitments became oriented primarily toward quantitative indicators: the most important thing is that you produce -- coal, timber, grain, machines and any parts for them, clothing, footwear, wool, stores, schools, palaces of culture, and so forth and so on.

The changeover of the competition to the struggle for economy and effectiveness is related to the breakdown of the existing traditions and customs, and a clear understanding of the fact that today the society needs not simply increased output of products, but also intelligent utilization of resources and the achievement of maximum results with minimum expenditures. With the increased scale of production, the national economy also has greater needs for raw materials, fuel and energy, metal, and various processed materials, and the supplies of minerals are not unlimited. Under these conditions, the significance of economical utilization of material resources increases. Suffice it to say that a reduction of the material-intensiveness of an item by only 1 percent in the national economy as a whole is tantamount to saving 6 billion rubles. Therefore a thrifty attitude toward that which is created by the labor of the people is a most important state problem. "Now the question of economizing on material resources," it was insistently emphasized at the November (1982) Plenum of the CPSU Central Committee, "should be regarded in a new way, and not so that if one has saved that is good, and if one has not, that is also all right. Now economy and a thrifty attitude toward public property decide whether or not our plans are realistic."

These questions must be posed in a new way when organizing competition as well. Under the 10th Five-Year Plan an attempt was made to turn the content of the competition in the direction of quality indicators. But they did not manage to do this completely: the volumes of production did not always increase more rapidly than expenditures on it did. What was the matter? Apparently it was that attention was frequently focussed on fulfillment of the plan, without taking into account its substantiation and difficulty, and the quantitative criteria for evaluating the results of labor were placed over the qualitative ones.

It is possible to direct the competition toward economy and efficiency only if the economic levers and stimuli motivate the competitors to reduce material-intensiveness and labor expenditures, to improve quality and to utilize fixed capital better.

The decree of the CPSU Central Committee and the USSR Council of Ministers, "On Improving Work for Strengthening the Economy and Efficiently Utilizing Raw-Material, Fuel-Energy and Other Material Resources," adopted in July 1981, emphasized that the most important criteria for developing and evaluating the fulfillment of counterplans and summing up the results of competition should be indicators that characterize a reduction of material expenditures and savings on other resources, and also the additional volume produced as a result of the savings. Such an indicator as the fulfillment of the plan for deliveries in the given assortment should contribute to this. It reflects more precisely the actual contribution of the competing collectives and helps to increase their motivation to search for reserves. And the method of normative planning itself, by increasing the operational economic independence of the production collectives, will guide their initiative in this direction.

What are the main ways to economize on resources? They include, first of all, reducing material-intensiveness, extensively applying progressive design decisions and improving technological processes, reducing the expenditure of raw and processed materials, more complete and comprehensive processing of raw materials, and also eliminating all kinds of excesses, inefficiency and disorganization. Socialist competition plays an irreplaceable role in achieving these goals.

Sometimes people express an opinion about the inevitability of increased capital-intensiveness and material-intensiveness of public production, thus justifying a tendency toward stabilization and even growth of expenditures per 1 ruble of commercial output. One cannot agree with this opinion. According to data for 1982, in the structure of expenditures for the output of industrial products, raw materials, processed materials, fuel and energy comprise 72.2 percent. This means that a 1-percent reduction of material-intensiveness is almost 3 times as "weighty" as a savings on other resources. Increased material-intensiveness can by no means be made up for with an advantage from economizing on other resources, particularly live labor. Therefore competition for efficient utilization of resources is today being placed in the foreground of forms and kinds of organization of competition. Here it is especially important to take a comprehensive approach to its organization, which makes it possible to wage a struggle for the introduction

of more modern technical equipment and progressive technological processes, improvement of the organization of production and labor, a higher level of technological discipline, and increased motivation of the labor collectives for thrifty, efficient utilization of material resources. Such an orientation causes people to think about how to work better and more productively, and on what to economize. Large tasks have been set in this area for the 11th Five-Year Plan. Suffice it to say that during the 5 years it will be necessary to save 200 million tons of fuel -- one-third more than during the 10th Five-Year Plan, and in machine building and metal processing, to reduce the norms for expenditure of rolled ferrous metals by 18-20 percent, steel pipes -- by 10-12 percent, and rolled nonferrous metals -- by 9-11 percent.

There have been many useful undertakings at industrial enterprises and construction sites, on kolkhozes and sovkhozes, and in transportation organizations. For example, in the Leningrad Elektrosila production association they have resolved during these 5 years to reduce the absolute consumption of metal products, at the same time increasing the assignment for the output of products by 20 percent.\* The principal importance of this initiative lies in the fact that it makes it possible to coordinate intensification of production with a reduction of the material-intensiveness of the products.

The organization of a mass campaign of collectives to reduce material-intensiveness requires that participants in the competition find a practical solution to many production-economic and educational problems. In one case this includes a revision of the elevated norms for the expenditure of raw materials, fuel and processed materials, in another case -- a change in the technological process, and in a third case -- better utilization of byproducts and the introduction of new materials.

Socialist competition, being essentially democratic, works as an active form of criticism. Its content includes not only irreconcilability to shortcomings, but also -- and this is very important -- a desire to overcome these shortcomings with concrete deeds. Leading production workers provide good examples of criticism with deeds here. Acting resolutely against outmoded forms and methods of organization of production and labor, they surpass the norms by a great deal and act as initiators of new, more progressive forms of labor organization. This was the case with the contracting organizations, the Dinamo method, the Shchekino experiment and many other undertakings. Competition helps to concentrate forces on the elimination of bottlenecks, on bringing up those who are falling behind, and on increasing the responsibility of each individual not only for his own part of the work, but also for the success of the entire collective. Practice clearly shows that in places where the executives act as initiators of new forms of organization of production and competition, and support and encourage everything that is progressive and advanced -- in these places they achieve high results.

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\*"Problemy ekonomiki razvitogo sotsializma" [Problems of Economics of Developed Socialism], Moscow, "Ekonomika", 1983, p 117.

Under the current five-year plan all enterprises and organizations have been given assignments for economizing on material resources. Competition is called up to help in their fulfillment. The production collectives of Kemerovo Oblast, for example, have committed themselves to saving under the 11th Five-Year Plan more than 1 billion kilowatt-hours of electric energy and 2.6 million tons of conventional fuel, and reducing losses of coal in the ground by 6 million tons. More than a half million workers have opened and are keeping personal accounts for thriftiness.

The CPSU Central Committee has approved the experience in struggling to economize in the Dneproshina production association.\* What is its point? Above all it involves labor organization. Each shop, shift, section and brigade bears material responsibility for irregular fulfillment of monthly assignments, for overexpenditure of any of the resources, for defective work and for failure to make deliveries. At the same time clear-cut criteria have been established for evaluating labor and providing incentives for all occupations and subdivisions. The amount of the material incentive fund depends on the fulfillment of the plan in terms of assortment, production cost, profit and labor productivity. The more difficult the plan in terms of labor productivity and the higher the output-capital ratio, the greater the amounts of the bonuses. There is strict accounting and calculation of the production cost for all kinds of products.

The competition for increasing efficiency and utilizing metal products has taken on special meaning. All branches of the national economy have undertaken concrete work for economizing on metal at enterprises and in associations. The competition will make it possible to save no less than 7 million tons of it during the 5 years. The recognized leaders are the labor collectives of Chelyabinsk Oblast. They have developed a comprehensive program for improving the quality of metal products and increasing the efficiency of the utilization of the utilization of metal up to the year 1985. In particular, it earmarks mastering the smelting of more than 100 new kinds of steel and an equal number of profiles of rolled metal, increasing the proportion of products with the State Emblem of Quality 1.5-fold, and providing conditions for saving about 700,000 tons of ferrous metals in the national economy.

Competition for economizing on metal has been arranged well at the Zlatoust Metallurgical Plant. There the personal accounts kept by the brigades, shifts and sections are not simply commitments, but are an important financial document which determines the amounts of the bonuses. The provisions stipulate: all brigades, foremen and shift chiefs receive bonuses in amounts from 1 to 15 percent of the amount that is saved (depending on the specific features of production). This has greatly increased the responsibility for the precision and efficiency in keeping personal accounts. Not a single one of the collectives that have economized on material resources have gone without a bonus. In 1982 the brigades of steel smelters alone were paid 15,000 rubles in their personal accounts.

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\* PRAVDA, 18 January 1983.

Support has been given to the practice of the Odessa Kislodromash scientific production association which for several years did not increase its consumption of metal although the production volume almost doubled during that time. The collective has developed and introduced a well-arranged system of economy. In keeping with it concrete assignments were delivered to each subdivision and each performer of work -- designer, technologist, worker. In 1982 more than 400 brigades reduced the labor-intensiveness of their products. The overall savings amounted to 63,000 norm-hours. This made it possible to increase labor productivity by almost 1.5 percentage points as compared to the plan.\*

The change in the direction of the competition toward economy and quality requires solving a whole complex of problems: developing conditions and normatives for its organization which are directed toward raising the technical and organizational level of production, and improving the planning and evaluation of the work of the collectives, taking into account the utilization of technical, material and labor resources. Without this it is impossible to overcome formalism in the approach to competition, which, unfortunately, is fairly widespread.

For example, at certain enterprises of Karaganda Oblast commitments are made without any economic calculation, and they are oriented not toward satisfaction of the needs of the national economy for concrete items, but toward overfulfillment of the volume indicators. As a result, during 7 months the enterprises of the oblast overfulfilled annual commitments for the output of products in rubles but did not fulfill the planned assignments for the delivery of many most important items.\*\* And this is far from the only case in which people do not take any special pains about commitments or burden themselves with calculations and investigations. Hence the noncommittal attitude toward commitments. In some places this attitude toward commitments has made its way into practice to such an extent that it is perceived as completely normal. If it is necessary to make a commitment, it is made, eloquently formulated, and posted in a visible place. When the time comes to take stock -- silence. And it also happens that the collective or worker, having made the commitment, does not even know with whom he is competing or what the conditions of the competition are. The September (1983) decree of the CPSU Central Committee, "On Improving the Organization and Practice of Summing Up the Results of Socialist Competition and Encouraging the Winners," required that we increase the role and significance of commitments in mobilizing workers for fulfillment of the plans and improve their economic substantiation. It oriented us toward a creative, businesslike style and an intolerance of formalism. The main thing is the real deed, organizing people for solving concrete problems. Collectives and workers who are not working with a complete return and who are satisfied with average results should not escape the attention of the organizers of the competition. When summing up the results of the competition it is mandatory to take into account the fulfillment of qualitative indicators.

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\*SOTSIALISTICHESKAYA INDUSTRIYA, 2 February 1983.

\*\*IZVESTIYA, 18 August 1983.

There are reserves for economy in each branch and in each labor collective. Automotive construction workers of the capital have created and are successfully applying reduced-waste technology. During 3 years of the 11th Five-Year Plan Uralmash workers have reduced the expenditure of metal for producing many kinds of products. Here every participant in the competition has his own personal account on which he enters his commitments for economy and organizational and technical measures that must be carried out in order to fulfill the commitments. These are coordinated with the engineering and economic services. Incidentally, this popular form of labor competition was originated several years ago by their neighbors, the collective of the Nizhny Tagil Uralvagonzavod. The cutter K. Vasil'yev drew attention to the large amounts of wastes. Having arranged the scraps according to size, he asked the technologist A. Poylov to find a use for them. They began to use the scraps to manufacture brackets, washers and other small parts which were previously cut from a whole sheet. The initiators were joined by the section chief, D. Tarasov, who figured out what kinds of wastes could be processed most efficiently on which kinds of equipment. The savings amounted to 2 tons of metal during the first month. Thus appeared the first personal account and a new form of competition among thrifty workers.

In the Novosibirsk Ob' leather footwear production association, the best workers, the masters of their trades, manage to save "trifles" -- for kopecks -- when cutting leather. The savings are achieved entirely because of mastery and discipline. In the evening before a working day it is unthinkable to allow themselves even a small drink: their hands will not be steady. Question: is it worthwhile to maintain such a "nickel-and-dime" gain? It turns out that it is. Kopecks add up to rubles, and it makes a difference to the workers that they have earned them honorably, and everyone is benefitted.

It is not by accident that I began to speak about the personal incentives of the workers. Today brigade forms of organization and stimulation of labor and brigade autonomous financing are becoming widespread. In autonomously financed brigades the economic indicators, the social activity and the people's attitude toward their work are considerably better than in ordinary brigades. But, speaking about brigade autonomous financing, one cannot allow it to lead to wage levelling. Earnings should be differentiated depending on the quality of the work, mastery, and the difficulty and conditions for labor. So far this is not being observed everywhere. Further development of brigade organization of labor raises the question of improving the interaction between contracting collectives and engineering and technical personnel and administrative teams.\*

Improvement of the development of competition presupposes the development of a socialist awareness, the desire to work conscientiously and honestly for the common good. To compete today means to wage a persistent battle against slovenliness, poor discipline and negligence, to develop in oneself the sense

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\*See the decree of the USSR State Committee for Labor and Social Problems and the Secretariat of the AUCCTU, "On the Approval of Recommendations for Introducing Brigade Autonomous Financing in Industry," of 17 November 1983, No 258/23-105.

of being a thrifty master. Production leaders are distinguished precisely by this attitude toward their work, a high sense of responsibility for the results of their labor and the labor of their comrades. To make their attitude toward labor the norm for the behavior of the majority -- this is what it means to achieve high effectiveness of all public production.

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## ROLE OF PLANNING IN SOCIALIST COMPETITION DESCRIBED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 84 pp 34-38

[Article by A. S. Luk'yanov, chief of the division for organization of labor and wages of the Baltiyskaya manufaktura Combine (Tallinn): "Planning of Socialist Competition"]

[Text] Like any other undertaking, socialist competition requires planning. By this we mean the selection and development of the most feasible forms of participation in the competition for various groups of workers and subdivisions, and also methods of ensuring its effectiveness.

What is available to practice here? In addition to plans of measures for the development and improvement of competition, one can list:

engineering substantiation for the commitments of the workers;

the development of personal plans for increasing labor productivity, following the example of the Dinamo plant;

competition on the basis of personal accounts of efficiency, which reflect planning assignments, commitments and the actual results of the work of the brigade in terms of the volume and quality of the products, labor productivity and the utilization of raw and processed materials;

many years of practice in concluding bilateral and collective agreements for competition, including agreements among leading workers of various enterprises of the country and where socialist commitments play the role of the planned goal of the competition.

The list that has been given -- and it could be continued -- convincingly shows that practice actively utilizes many elements of planning of competition. In the future planning is to become the primary means of providing for directed development of competition, a combination of initiative and mastery with the achievement of the goals set for the collective of the enterprise.

Planning of competition, in our opinion, can include the following tasks:

analysis of production, and the determination of its reserves which can be put to work and the needs which can be satisfied as a result of development of competition;

the disclosure of ways and means of carrying out the tasks that have been set, and also the technical, organizational, economic and moral-psychological conditions;

the determination of the concrete forms of organization and the specific slogans for the competition, and the development of the plan for its organization and control and provisions concerning these;

the establishment of clear-cut indicators, assignments and measures for the development of the competition with an indication of the people who are responsible and their deadlines;

the determination of the planned economic and educational effect.

Analysis of its effectiveness occupies an important place in the planning of competition. This is a new area for us. In order to determine the actual effectiveness of the competition, it is necessary to learn to distinguish between the effect from it and the general results of the operation of the enterprise. This effect is quite clear when competition is organized in sections which did not have it previously. In other cases it is considerably more difficult to see the effect from the competition. In addition to comparing the results of activity, in these cases we also use questionnaires, factorial analysis, and so forth.

Analysis of the competition makes it possible, instead of making unfounded statements, to show its actual usefulness as well as the gaps and shortcomings in it. Thus even the first analysis of the results of the competition according to the personal accounts of effectiveness in 1980 showed that it did not produce an appreciable increase in labor productivity under our conditions. The reason was that this kind of competition replaced other forms of labor competition, thus "removing" the basic reserves.

When determining the goals of the competition, one must necessarily link it to the tasks that are being fulfilled by the enterprise and adapt advanced practice to these tasks. Under the 10th Five-Year Plan, for example, we introduced the initiative "To work without laggards!" and we were one of the pioneers in spreading it throughout Estonia. The initiative was well received by the competitors. When considering the plans for the 11th Five-Year Plan, the administration, the public organizations and the PDPS were unanimously in favor of retaining and improving competition under the slogans "To work without laggards!" and "Engineering support for workers' initiative" (the latter was a means of achieving the former).

The development of brigade forms of labor organization set new tasks for the planning of competition. Especially important among them was individual

competition. In order to encourage personal mastery under the conditions of brigade labor, we adopted a decision to organize competition around the landmarks of the 11th Five-Year Plan. In order to interest the majority of the workers in it, the winners were to be divided into three groups, depending on their individual productivity. Thus in order to win the title of a prize winner of category I, by the first landmark, the 64th anniversary of October, the worker had to fulfill the assignment for 2 years, category II -- 1 year and 10 months, and category III -- 1 year and 8 months. The prizes for the winners were 100, 60 and 30 rubles, respectively.

Introducing into practice the concept of planning the results of competition raises the question of their place among the production indicators and commitments which are in effect today. In order to avoid an increase in document turnover, it is necessary to include the results of competition planned for the year in the personal production plans. In our opinion, for participants in the competition they should have the same weight as indicators of the personal plan.

Planning the results of the competition does not impede the manifestation of the creative independence of the masses. On the contrary, this is the first point of reference for all competitors, the one which mobilizes their effort and energy. In the future too, it seems to us, regardless of what we have become accustomed to, it would be expedient to replace commitments during the course of the competition with the final results which have been planned by the worker in conjunction with the administration. For even Robinson Crusoe in his isolation could make a commitment, but he would not have anyone with whom to compete.

Planning the results of competition is, in our opinion, one of the branches of production planning which makes it possible to take into account that reserve which lies in the development of the creative competition of the workers. Discussions of the spontaneous nature of this process in fact indicate a lack of understanding or a lack of desire to deal with the reality of the organization of competition.

In the system of indicators for planning competition one can single out the ways workers and subdivision are included in various forms of competition, the provision of the latter with the necessary resources and planned measures, as well as the economic and educational effectiveness. The indicators should be realistic, simple to account for, calculate and control, generally comprehensible and comparable. A very important requirement: there should not be too many of them.

In order to be able to compare the results of the competition in the planning stage, it is necessary to create methods of adjusting the indicators, depending on the actual time that is worked: 1) overtime work and work on days off; 2) reductions of working time because of illness, training, performance of state duties, feeding children, and so forth; 3) losses of working time because of factors which do not depend on the worker (administrative leaves, idle time and so forth). It would hardly be expedient to establish one general rule for everyone. But the rules must be reflected

in the provisions concerning the competition, and the competitors must be made aware of them, even in the stage of planning so as to avoid conflicts and misunderstandings when summing up the results.

At Baltiyskaya manufaktura, the enterprise standard for organizing competition was introduced within the framework of creating the first section of the comprehensive system for quality control. Its sections establish the policy for planning and organizing competition: the general part, developing provisions, adopting socialist commitments, incentives, publicity, disclosing and disseminating advanced experience, and accounting for the results of the competition. To further improve control of the competition, beginning in 1981 the combine changed from planning individual measures to drawing up summary plans for the development of competition and including them in the collective contract. They include the following sections:

organization and administration of competition;

indicators of the workers encompassed by various forms of it;

measures for the development of new forms and improvement of existing ones;

ensurance of the effectiveness of the planned organization of competition and the allotted resources;

anticipated results and effectiveness.

The official instructions for workers of the planning division and the division for organization of labor and wages include additional duties for planning competition. They have begun to improve document turnover and the training of shop and section leaders and the public, for which the division for organization of labor and wages has drawn up a special program and aids for managing competition, which include a section on its planning.

The summary plan is usually developed by the division for organization of labor and wages, which, along with the trade union committee, supervises its implementation, prepares its own suggestions for improving the competition and generalizes those which are submitted, and analyzes its effectiveness.

The search for better forms of management of competition enables the combine to utilize internal production reserves more fully and raises the level of the workers' satisfaction with their labor. During the past 5 years, for example, labor turnover at the enterprise has decreased by half, and during the 10th and 11th Five-Year Plans Baltiyskaya manufaktura has regularly been one of the leaders of the country's textile industry. The organization of competition here is regarded as one of the best in light industry in the Estonian SSR.

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## IMPORTANCE OF ORGANIZERS IN COMPETITION STRESSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 84 pp 38-42

[Article by A. A. Tkachenko, candidate of economic sciences, and S. B. Yesilevskiy, Zaporozhye Pedagogical Institute: "Competition Needs Organizers"]

[Text] At a number of industrial enterprises of Zaporozhye and other cities of the Ukraine a sociological investigation was conducted to study the organization of socialist competition. The complete cycle of the organization of competition was regarded as a unity consisting of three stages:

preparatory, including the development of the plan and the establishment of conditions for socialist competition, discussion and adoption of commitments;

competitive, including the work itself and also the creation of conditions for the competition to be conducted smoothly;

summary, consisting of the distribution of the competitors among the positions, depending on the results that are achieved and also publicity of the achievements of the leaders, granting awards to the winners, and so forth.

The selective investigation included individual conversations and a questionnaire of workers, including organizers of socialist competition. The individual socialist commitments of workers, engineering and technical personnel and employees were studied and analyzed. A total of 2,220 workers were questioned. The selection included no less than 10 percent of the personnel of the enterprises that were investigated.

### Basic Principles Are Not Always Observed

Here are some conclusions from the analysis of the data that were obtained. Only 56.6 percent noted complete observance of the principle of publicity, 51.1 percent -- the principle of comparability, and 30.2 percent -- the principle of the possibility of repeating advanced practice. The principles of organization of competition were not always or not fully observed by the organizers mainly because of a lack of knowledge of their specific duties and the low level of control and incentives for their activity. The results of

the interviews of foremen and shop chiefs made it possible to determine the degree of their fulfillment of the functions of organizers in the stage of fulfillment of socialist commitments. Thus only 25.7 percent of those questioned think that all the necessary conditions are being created for successful fulfillment of socialist commitments, and 11.9 percent note that these conditions are not being provided at all.

As for the organization of the study and mass utilization of the experience of the leaders, only 12.1 percent of those questioned noted complete fulfillment of these functions, and 37.8 percent stated that reports on the course of the fulfillment of socialist commitments were not discussed at all in their collectives. The situation is better when it comes to helping those who have fallen behind. Only 5 percent of the overall number of people questioned noted that this function was not being fulfilled.

The results of our exhaustive observations (one of the authors of the article was introduced into the collective of one of the Zaporozhye enterprises as a trainee for the position of shop chief) also show the low level at which organizers of the competition carry out their functions. For example, at conferences with the shop chief and five-minute briefings before the beginning of the shift held by the foremen, not one of the subdivisions of the plant actually summed up the results of socialist competition, nor did they disclose who the leading and trailing workers were, and they did not discuss the course of the fulfillment of collective and individual commitments.

The existing shortcomings are to be rectified by a comprehensive system for control of the quality of labor which is being introduced at a number of industrial enterprises. But in these systems questions of organization of competition are poorly developed. According to the data from our investigation, the organizers are not very well informed about their duties, and the documents regulating their activity are poor. An analysis of 128 official instructions for organizers of competition, from the foreman to the shop chief, showed that in describing the work of organizing competition, the necessary requirements are not observed. The majority of instructions reduce everything to an abstract formulation, "organizes competition," without any indication of the methods, devices, procedures or time periods.

The lack of control over the organization of competition has a negative effect too. We came to this conclusion by analyzing the standard which is in effect for the enterprise, "Organization of work for controlling the quality of the labor of engineering and technical personnel and employees," and the classifier of violations on whose basis the coefficient of the labor quality is reduced. The classifier includes no violations related to the organization of competition. There are no incentives of any kind for the activity of the organizer of socialist competition.

#### Some Suggestions

In order to improve the organization of competition we have developed a system for controlling it. The management cycle of the system consists of four stages: planning, organization, control and regulation.

In the stage of planning the most important thing is a well-thought-out system of indicators. At industrial enterprises of the Ukrainian SSR, where the research was conducted, there are from 20 to 84 of them. Such a large number of indicators diffuses the attention of the competitors and, moreover, forms the opinion that it is impossible to fulfill them all.

After the formation of the indicators, the organization stage begins, the result of which is the creation of agencies and the structure of the staff for controlling the competition as well as the development of provisions concerning administrative agencies. In the system we developed the role of the organizer is played by a plant council for management of socialist competition, which includes two groups of workers. The first is the planning group. Its duties include determining the composition of all teams for managing the competition, and also their functions. Production organizers should be the organizers of the competition. It is not by accident that we are drawing attention to this. Up to this point there has been the opinion that only public agencies should deal with the competition and that administrative-economic agencies have no business here. In order to concretize and clearly define the duties of all categories of engineering and technical personnel and employees for organizing the competition, we have developed a system of functions.

In order to observe the principle of comparability, in the first stage it is necessary to develop a plan of plant conditions for various kinds of competition in which the competitors are divided into groups on the basis of the equality of their working conditions and the possibilities of comparing the results. If this kind of grouping is impossible, it is necessary to have methods for summing up the results which make it possible to evaluate the contributions of the competitors to the results of the work of the enterprise. This function is fulfilled by an engineer for organization of the competition. A similar function in the shop is the responsibility of the engineer for labor. The plans for the socialist commitments of the structural subdivisions are developed by their leaders, who, in addition to this, are obliged to render assistance in the development of individual commitments.

The creation of a well arranged system of functions is a necessary, but still not adequate condition for raising the level of organization of competition. It is also necessary to have an effective system of control and incentives. This function is performed by the second working group -- the control group. Such groups have been created in a number of the industrial enterprises of the Ukraine that were investigated. They include members of the party committee and people's control and "Komsomol searchlight" groups.

The classifier of violations of the standard of the enterprise, "Organization of work for controlling the quality of the labor of engineering and technical personnel and employees," has also undergone changes. Previously it did not envision a reduction of the coefficient of labor quality for failure to fulfill functions for organizing competition. Now, for partial failure to fulfill these functions the coefficient is reduced by 0.2, and for complete failure -- by 0.5, which entails taking away part or all of the bonus.

The usefulness of public control over the activity of organizers of the competition is shown by an experiment we conducted at one of the industrial enterprises in Zaporozhye. With this experiment we wanted to confirm the hypothesis that an inadequate level of control reduces the effectiveness of competition.

At the beginning of the experiment two shift foremen (their shifts operate under identical production conditions, with the same equipment, and they produce similar products) were made responsible for performing certain functions for organizing competition. On one of the shifts (control) throughout the course of the experiment the activity of the foreman was not supervised, and on the other shift (experimental) this supervision was provided. Within 2 months on the experimental shift labor productivity had increased by 2.1 percent as compared to the base period, and the number of output norms that were not met decreased from 5.6 percent to zero. On the control shift all the indicators remained practically the same.

Thus the complex of research that was conducted confirmed the need for daily efforts in organizing socialist competition.

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## DIFFERENCES BETWEEN INDIVIDUAL AND GROUP COMPETITION RELATED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 84 pp 42-45

[Article by V. D. Konyukhov, candidate of economic sciences, Institute of Economics of the USSR Academy of Sciences: "The Competing Individual"]

[Text] The commitments of the collective and the individual worker should be different, naturally. But in practice, unfortunately, this distinction is not always made. Frequently only the collective commitments are announced. But the conditions for the activity of the collective, in my opinion, change more frequently than do those of the individual. Labor in an individual working position has a smaller number of characteristics and the direction of the competition among individual workers is more permanent than for collectives. From year to year the reserves of the collectives change depending on many circumstances, which is then formalized in new socialist commitments. But the reserves in the working position, as a rule, remain approximately at the same level for a number of years.

The activity, or, as sociologists say, the degree of inclusion of workers in competition, differs greatly. According to data of a sociological investigation conducted at one of the enterprises of the automotive industry,\* the actual inclusion in the competition of workers with individual commitments was as follows: very high -- 16 percent of the competitors, high -- 22.5 percent, low -- 38.5 percent, and, finally, 23 percent of the workers were not participating in the competition at all.

The formalistic attitude toward individual commitments is manifested in the ease with which they can be fulfilled. According to data of the investigation of a group of enterprises in Sverdlovsk, only half of the individual commitments require any exertion of effort, about 10 percent of them are not difficult enough, and the rest are close to the planning assignments and have

\*Tukumtsev, B. G., "Indicators of Individuals Included in Socialist Competition," SOTSIOLOGICHESKIYE ISSLEDOVANIYA, 1981, No 1, pp 155-157. Similar data have been produced by other investigations.

been significantly surpassed during the first months of work. The difficulty of the collective and individual commitments varies extremely. Thus at the aforementioned enterprises of Sverdlovsk, 90 percent of the shop commitments were difficult, while one-third of the shift, section and brigade commitments, and only one-fourth of the individual commitments were.\*

Public defense of commitments has become widespread in recent years. It increases the activity of the competitors. At the same time it is psychologically fairly complicated to increase the difficulty individual commitments, especially in primary labor collectives (brigades, sections).

The principle of comparability is realized primarily through the system of indicators. In individual competition, as a rule, labor and technical-economic indicators are used for measuring output. Of course they help to reveal reserves in the working position, but the direct comparability of the products under modern production conditions is so limited that it does not make it possible to organize competition on a mass scale.

Usually they compare not absolute amounts (tons, meters, pieces and so forth) of products that are produced, but relative fulfillment of the planned assignments and norms. But then a high evaluation of labor can be achieved not only as a result of good work, but also by reducing the planned assignment. Therefore it is useful to measure how the individuals or collectives grow relative to themselves, how they improve their own indicators. Consequently, the significance of the "Dinamo" method of individual planning of labor productivity increases again.

People try to achieve comparability of results and increased production activity by separating out homogeneous groups of competitors. Competition of youth groups has become widespread, for example, for the title of the best young worker, and also among Komsomol-youth collectives. This is proper, for it is difficult for a young worker to compete with a veteran -- just as, say, it is for a woman lathe operator to compete with her male colleague. But evaluating the successes of each relative to his own achievements makes it possible to make the competition universal, without reducing it to a competition of different groups.

This approach helps to solve traditional problems of comparing workers of the basic and auxiliary occupations, and to take into account the various production, socio-domestic and other indicators. As an analogy let us recall such a prize in competitive sports as the "Progress Cup," which is earned by advancing the team on the tournament charts for two seasons if it has improved its game and moved ahead of one of its competitors, even if it has not surpassed the leaders.

\*"Sotsialisticheskoye sorevnovaniye i uchastiye trudyashchikhsya Urala v upravlenii proizvodstvom" [Socialist Competition and the Participation of Ural Workers in Control of Production], Sverdlovsk, 1979, pp 10-11.

The publicity for advanced practice is also worth mentioning. It is frequently oriented toward showing the average achievements in the collective or group. A reorientation is necessary. Leading labor methods should be demonstrated in each working position, and later they should be figured out individually. Advanced practice "as a whole" can be attractive as a slogan, as an idea, but without personal testing by each individual, as it turns out, it does not produce any real return.

It is usually said that a situation cannot be considered favorable when the total result of the work of the collective is positive, but only because of the achievements of the leading members, which make up for the failure to fulfill assignments and commitments by those who lag behind. This is true, but there is also a subtlety here. The workers who lag behind are not all the same. Some of them may not have reached the norm, but have still progressed as compared to the preceding period, while others may not have improved their indicators at all. There are all kinds of laggards, and here again it is necessary to approach them individually. It is not always bad to have many people lagging behind. What if a lot of newcomers had arrived? It would be bad if they were making no progress.

The connection between the production initiative of the workers and the economic results of the enterprise can be traced on three planes: 1) between the fulfillment of the planned assignments of the enterprises and the results of the labor of the workers; 2) between the autonomously financed results of the enterprise and the savings on expenditures at the working positions; 3) between the plan for the enterprise and the socialist commitments of members of the collective. This is usually done as follows.

Coordination of individual labor with the planned results of the enterprise is provided through the development, taking into account the specific feature of the branch, of all-encompassing indicators, which are used simultaneously at several contiguous levels of production (for example, the working position -- brigade -- section -- shop). They clarify the labor contribution of each individual to the overall result.

Informing the working positions of the autonomous financing indicators of the enterprise -- clarity in this area is achieved by utilizing personal accounts of savings in the brigades and at the working positions. They are based on the expenditure norms for the various kinds of products, accounting for the actual expenditure, planning of production costs, and all-encompassing autonomous financing indicators of shift subdivisions.

The connection between socialist commitments of workers and the plan of the enterprise is created by the adoption of counterplans. The counterplans of the enterprises should be the sums of the socialist commitments of the workers. The development of the counterplan of the enterprise must necessarily begin with the working position. This prevents bureaucratic distortions, it becomes a reliable barrier against departmental tendencies, and it guarantees that this movement will become widespread.

The effectiveness of competition increases when the workers are better informed and when they are extensively familiarized with the evaluations of the work of the collective and with the decisions of party, soviet, planning, financial, management and trade union agencies concerning the results of their labor.

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## ROLE OF MANAGEMENT IN COMPETITION DESCRIBED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 84 pp 45-52

[Article by V. V. Shestakova (Tyumen): "Competition and Management"]

[Text] In the Yuganskneftegaz production association, one of the largest in the Tyumen North, one can see certain successes in the development of socialist competition. Competition engineers handle its organization and technical specialists are enlisted for summing up its results. As parts of informal groups of experts, they evaluate the results of the production activity of the competing collectives. An appreciable role is played by the commission for the struggle for economy and thriftiness.

At the same time, from the example of this leading enterprise one can see clearly the shortcomings in the management of socialist competition. In our opinion, they reflect the critical nature of the present stage of the competition. There is now a need to create an integrated theory which could act as an element in the concept of developed socialism. The need to orient the competitors toward the final results is becoming more and more crucial on the plane of management of the competition.

When workers of drilling and repair brigades were questioned it became clear that they were familiar with and could understand the idea that competition means primarily the desire to win. Working in drilling administration No 2 is the Komsomol-youth brigade of M. Politov. Every member of the brigade could list the best drillers immediately, but could also explain the "apportionment" of positions held by drilling brigades in the administration and the strong and weak points of the competitors. They regularly compare positions and results here.

In the brigade for underground repair of wells whose foreman is V. Zadorozhnyy there is a critical sense of "longing for a competitor": for many years in a row the brigade has had outstanding labor achievements, competing actually with itself. "We developed long ago," said the brigade veteran I. Gladyshev, "our own brigade output norm, which considerably exceeds the normative. And it any watch has not lived up to the brigade standard, in our opinion it is worked poorly even though it may have covered the official norm." The

duration of one repair job conducted with excellent quality by this brigade during the time of the investigation amounted to 46 brigade-hours while the norm was 77. "But, unfortunately, we do not know how our results look against the background of the best achievements in Glavtyumenneftegaz and the branch as a whole," added V. Zadorozhnyy. Competition is conducted within the brigade among watches, and the names of the best watches are posted in the day room. Here we were shown a diploma won in a competition of 39 brigades for underground repair of wells of the association, which was held in August 1981. The watch of senior operator I. Gladyshev was declared to be the best.

The collective of the foreman M. Politov was better informed about the course of the competition than was the brigade of repair workers. In the day room there is comprehensive information about the brigade's activity: socialist commitments for the year, the blackboard of "Best members of the brigade," on which the names of the day's leading workers are written in chalk, a diagram which shows the course of the competition with the brigade of foreman V. Gorkavenko, and weekly summaries of the results of the activity of the drilling brigades in the shop, administration and association. The drillers keep a chart of the expenditure of materials and fuel, which appeared when it changed over to the brigade contract, which now includes the majority of the drilling brigades of the association.

While emphasizing the undoubted merits of the foreman and other managers of the drilling work administration No 2 in providing for publicity and comparability, one cannot but note that the working conditions of the drillers contribute more to good information than, say, those of the repair workers do. The most important indicator of the drillers is the number of meters drilled, and it can be calculated more easily so that the brigades can be informed of it. The situation is different for repair workers: they are still waiting for coefficients to be developed which take into account the difficulty of the repair jobs, the conditions under which they are performed, and so forth. There must be a direct dependency between the level of organization of labor and the effectiveness of the competition.

To the question of who should be in charge of the competition, both the drilling foreman, M. Politov, and the chief of the administration for increasing the petroleum yield of the fields and capital repair of the wells, G. Kurochkin, without hesitation answered: "The manager of the subdivision." This idea has long been customary for managers of all ranks, and there was not a single instance in which any of them waved off questions having to do with the competition. For the foreman M. Politov, to hold meetings and sum up the results of the work of the watches promptly, to update the information about the activity of the brigades, and to familiarize their members with how the others have worked -- these duties are just as important as the technical duties of the manager of the local labor collective. There is no doubt that the additional meters of drilling are accomplished because the brigade is not working blindly, and the workers have a good understanding of the task as a whole and of their role in carrying it out. For it is important for them to know not only the direct result of their own efforts, but where they fit into the overall labor process. This contributes to drawing each member of the collective into the concerns of the enterprise as a whole.

There is no doubt that in the collectives we have discussed a good deal has been done to organize competition. But can one say that a process of management of the competition has been initiated there? It seems to us that it has not. Management consists in the utilization of relations involving competition and mutual assistance, and it is directed toward increasing the economic effectiveness of the labor of the competitors (economic result) and their social culture (social result).

In management of the competition all functions of scientific management should be carried out: goal setting, projection, planning, organization, stimulation, accounting and so forth. And when only certain ones of these are carried out, for instance, organization or stimulation, the competition is not managed. In general the organization of competition is the creation of conditions for the development of relations of competition and mutual assistance: the development and acceptance of conditions for competition and socialist commitments, distribution of workers in the corresponding categories and groups in order to achieve the greatest comparability, improvement of conditions and organization of labor, provision of material incentives, and so forth. But organization is only one of the functions, and to be limited to it alone means to abandon the matter of management of the competition at the halfway point.

Numerous sociological investigations show that the activity of the organizers of the competition and of the competitors themselves increases in the stage of adoption of commitments and when summing up results, while the process of competition itself actually remains unmanaged. And attempts to perform individual functions of management lead to a situation where they are not associated with the competition in the minds of the competitors, but have the effect of managing the production process.

Competition is mobile and changing, and it depends on a multitude of the most varied factors: conditions and organization of labor, the moral and psychological climate in the collective, the methods and devices used by the manager of the collective, the observance of principles of scientific management, and so forth. If these factors are formulated purposively, one achieves a correspondence between the object and subject of management. If not, the form is separated from the content and it turns into formalism.

But what forms of competition are in operation in the association? The answers to the question, "In what forms of competition do you participate?" -- have been reduced to approximately the following: "We participate in the struggle for better indicators in labor, but how does one name all the various forms of competition, can you really remember them?" We asked the engineer for competition, T. Pechenkina, "How many forms of competition are there in the administration as of today?" She counted up all the conditions for the competition and it turned out that there were 14 of them. We asked this same question of the senior engineer for competition in the association, V. Sashina. She hesitated for a while and then said: "About 30. In any case in our division we have about 30 conditions for the competition, and all of them are in effect."

Along with the deputy secretary of the party committee, T. Vlasova, we turned in the "Plan for the Social Development of the Collective of the Association for 1981-1985" to the section entitled "Kinds and Forms of Socialist Competition" and we counted ... more than 60 kinds. But this is not all. In the division for scientific organization of labor and administration there are conditions for competition which were developed in connection with the changeover to the new forms of organization and payment for labor. Since their intensive introduction began quite recently, these forms have not been reflected in the aforementioned list. Incidentally, under number 62 in it is the movement for a communist attitude toward labor. The special months, competitions, reviews, schools of advanced practice and various forms of competition which duplicate one another are separated by commas in the list. There is no sequence, hierarchy or interconnection, i.e., anything that would reflect the organizational structure of the competition as a system. True, it must be emphasized that we have not managed to find such a structure anywhere. In literature this important issue is considered indecisively, and there are almost no good practical recommendations. The creation of a theoretical model for management of competition and also its organizational structure with respect to labor collectives, taking into account their specific features is a crucial scientific task.

Among the obstacles on the path to improvement of competition, people justifiably consider one of the leading ones to be the shortcomings in moral and material incentives. The lack of system in the existing forms of material incentives is reflected in the numerous provisions which are in no way linked to one another or to the results of the competition.

In the Yuganskneftegaz association, let us say there are more than 30 forms of competition and provisions concerning awards that are related to them. Moreover, the association participates in various forms of city, oblast, branch and union socialist competition, and, consequently, the corresponding provisions concerning awards also apply to it. In essence this is a kind of lottery without losers: one way or another you will meet some set of provisions! A shower of bonuses can suddenly pour down from out of the blue: it can turn out that you have simultaneously won in several forms of competition. And not because you have struggled long and hard, for example, for economy and thriftiness. No, you have worked as you usually do; it is just that others have been inefficient and uneconomical!

But can the brigade of M. Politov, unexpectedly for the brigade of V. Gorkavenko, become the winner in the competition between them? Hardly. The foremen and the workers not only know how much they have done today, but also how and why the success was achieved, for they compare the main thing -- the fulfillment of the main indicators in physical terms, and the results are summed up only in terms of them. The drillers could hardly receive a bonus for overfulfillment of the plan for gathering scrap metal if they have not fulfilled the plan for drilling work.

Today 10-12 percent of the annual material incentive fund is spent for bonuses for the results of competition in the association. Is this too much or too little? We have before us the autonomous financing chart of the brigade for



foreman V. Zadorozhnyy. For several years now it has not failed to overfulfill the output norm by 40-50 percent. It has won the title of winner in its shop and in the given month, for which it was awarded a monetary bonus. We read: "The fund of the foreman -- 101 rubles." For each brigade member it amounts to ... 7 rubles, or 1.5 percent of the average earnings. Such a "bonus," if one may call it that, will hardly be a stimulus in the competition. But what motivates the brigade of V. Zadorozhnyy to accomplish outstanding labor achievements? As the members of the brigade themselves explain, "this is not a matter of money, but of pride, and we do not want to lose the title of leaders." The result in and of itself is exceptionally important and remarkable, but it is achieved aside from the organization of competition in the shop.

The organizational structure of the competition lags behind the increasingly complicated socio-economic tasks: at each step there are new forms of competition and the staff in charge of its organization is enlarged correspondingly. How many more new forms will arise if in the future there continues to be a tendency toward extensive development of its organizational structure, whereby the goals of various forms of competition are not the final, but the intermediate results of labor?

In the Yuganskneftegaz association more than 20 specialists deal directly with questions of competition. There is no doubt that tomorrow there will be more of them. And how could it be otherwise when the paperwork which comprises the competition is increasing so rapidly! Developing the new forms which appear almost monthly, gathering information for summing up the results, compiling reference materials, making reports for each of them, filling out documents for awarding the leaders, providing visual agitation, participating in meetings, carrying out various instructions from the administration and so forth... Is this organization of competition? Is it thinkable to break into the brigades, to penetrate into the new forms for organization and payment for labor, which is the only basis for influencing competition in the labor collectives? Unfortunately, summing up the results amounts basically to registering them. There is no control of the competition in the strict sense of the word. This is the more the pity since the engineers for the competition are intelligent specialists, conscientious workers who are sincerely devoted to their duty. Why does their activity have so little in common with management of the competition?

Apparently, the mechanism for management of the competition should create conditions for the direct participation of the workers themselves in it. A small number of conditions should be simple and comprehensible to everyone. The system of incentives, including material, should provide for optimal results of their activity. It has long been time to sum up the results of the competition not by the present archaic means, whereby this is frequently left up to the discretion of the administration, but in terms of a few most important indicators which are clear and comprehensible to everyone, and this should be done publicly and on the spot.

Great possibilities lie at the juncture between competition and social planning. It is necessary to learn to translate the results of the production activity of the shop, division, administration and so forth intelligently and clearly into the language of social achievements. In other words, to show the direct dependency between concrete social goods and the level of labor productivity that is reached. Meters of drilling, tons of petroleum, cubic meters of gas and so forth must be related to the real possibilities of satisfying material and spiritual needs in the plans for social development.

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CSO: 1820/121

## CHANGES TAKING PLACE IN TEXTILE INDUSTRY DESCRIBED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 84 pp 53-80

[Round table discussion conducted by Ye. Lysaya: "Textile Production: A Time of Changes"]

[Text] Pavlovskiy Posad is a small point on the map of Moscow Oblast. It is a town with a population of 71,000 residents. But what a unique selection of fabrics is produced by its enterprises!

Georgiyevskiy Hall in the Kremlin, the Olympic facilities, the loges in the Bolshoy Theater, halls in the Peterhof palace, cabins in modern airliners and ships are decorated with Jacquard fabrics produced by the silk weaving factory imeni Sverdlov. Pavlovskiy scarves with colorful drawings from Russian folk decorations have become famous throughout the world. The city's factories produce woollens and coat fabrics, printed cotton, satin, textile haberdashery and fabrics for footwear.

In June 1984 Pavlovskiy Posad will be 140 years old, but even older are the enterprises around which the settlement grew up. It acquired the status of a district seat in 1844. Certain of the factories date back to 1812, when the Russian industrialists, in order not to leave their manufactories to the French, moved their enterprises out of Moscow. But when they returned to Moscow after Napoleon's defeat, they left their industries where they were because it turned out that there were hard-working and talented masters there.

Today's problems related to the development of textile enterprises of this region are largely typical of old textile regions around Moscow, Ivanovo, Kostroma, Yaroslavl, Vladimir and so forth, and this is why the city was selected as the place for holding the round-table meeting, which was organized by the EKO editorial staff in conjunction with the Pavlovskiy Posad CPSU Gorkom. The discussion was led by the editor-in-chief of the magazine, Academician A. G. Aganbegyan, and the deputy editor-in-chief, Prof. D. D. Moskvina.

Participating in the meeting were:

P. V. Alekseyev, chief inspector of the USSR State Committee for Labor and Social Problems;

V. G. Bondarenko, deputy minister of the RSFSR textile industry;

A. M. Dmitriyev, director of the Pavlovo-Pokrovsk factory;

M. I. Drozdova, director of the Kornevskiy branch of the Moscow Krasnaya Lenta textile-haberdashery production association;

V. A. Yegrashkina, spinner at the Pavlovo-Pokrovsk cotton fabric factory;

Z. V. Zakharova, chairman of the Pavlovskiy Posad gorispolkom;

Yu. I. Kuvayev, first secretary of the Pavlovskiy Posad CPSU Gorkom (Yu. I. Kuvayev is now a trade union official);

R. I. Kudryavtseva, weaver at the Pavlovskiy Posad worsted combine, deputy of the RSFSR Supreme Soviet;

A. P. Makeyev, general director of the Moscow scarf production association;

T. P. Miryasova, deputy chief of the Moskhlopprom industrial association;

S. I. Ratnikov, chief of the republic Rospromtekstil'galantereya production association;

L. G. Romanenko, head engineer of the republic Rospromshelk industrial association;

A. K. Sokolov, director of the Rakhmanovka silk combine;

Yu. N. Surin, director of the silk fabric factory imeni Ya. M. Sverdlov;

N. R. Shabalina, director of the Pavlovskiy Posad trade network.

What Is Impeding Renovation?

A. G. Aganbegyan: We should like to look at problems in the development of textile production in the overall context of the economic and social tasks that face the country. If they are formulated in light of the requirements of the last plenums of the CPSU Central Committee, one can say that life is being concentrated around two interconnected strategic tasks of the socio-economic plane: the transfer of the national economy to the path of intensive development and improvement of the well-being of the workers.

The overall patterns in the transfer of the national economy to the path of intensive development, naturally, touch upon all areas. We should like to consider them with respect to your branch. After all, the textile industry is

one of the largest and most significant branches in the national economy: it plays an exceptionally important role in providing for improvement of the well-being of the people.

The July (1983) Plenum appealed to all of us to develop new economic thinking. It is multifaceted, of course. But in addition to developing initiative and enterprisingness, providing conditions for economizing, and providing for all-around increase in labor productivity, the new thinking requires a reinterpretation of many tenets and views on the development of the national economy which have taken form historically. One of the aspects of the new approach is the re-evaluation of the positions of the branches in the overall system of the national economy, assigning a larger role to those branches which can be lumped together under the overall title of "industry of well-being" and which at some time for some unknown reason were named "light industry," although, of course, they are certainly not light no matter how you look at it. The branch requires attentive consideration of its needs and demands, and a certain redistribution of capital investments in its favor. And not only because it solves important problems on which our well-being depends, but also because there have been various negative tendencies in its development. If we do not put a stop to them promptly, this can lead to a great backwardness in the well-being industry, and the amount of time required to make up for this later will increase geometrically.

A number of symptoms show that in the textile industry events are beginning to take place which cannot but disturb us. One of them is the reduced number of workers. The older generation of textile workers is going on pension, and fewer and fewer youth are coming to replace them. Another event is the great overstocking of many kinds of products from this branch. The problem of insufficiently high quality is becoming very significant.

When considering problems of textile production we must speak about long-term plans, about the prospects up to the year 2000. Moreover, the year 2000 is a significant landmark, and not just the end of the century. It is the changing of the millenium! Therefore far-reaching vision is extremely important to us now.

We have selected Pavlovskiy Posad because here the branch is a part of an interesting complex. And the city itself is known for its revolutionary and labor traditions.

Large collectives and skilled leaders are working at the textile enterprises. We should like to generalize their positive experience, take a constructive approach to considering their unsolved problems, and hear advice and suggestions.

Yu. I. Kuvayev: The textile industry holds a leading position in our city and rayon; it provides 74 percent of the overall industrial output. Therefore among the rayons of Moscow Oblast too our rayon provides a significant share of the output of consumer goods. The assignment for the first 3 years of the 11th Five-Year Plan for product sales has been successfully fulfilled. Still, a number of textile enterprises are not keeping up with the plans.

These enterprises are floundering for various reasons: at some renovation is being delayed, although they are certainly old enough -- more than 100 years; others have come up against a reduced demand for their goods and a stockpiling of them; still others are having to deal with a shortage of labor resources. The solutions to the numerous problems depend on the enterprises themselves. But in overcoming certain difficulties and removing certain obstacles, they need assistance from the branch, related enterprises, and suppliers of raw materials, processed materials and equipment. The city party committee attaches great significance to improving the forms of socialist competition. Before today's round-table meeting we all visited the factory imeni Sverdlov. Many of you probably paid attention to the organization of the competition there according to groups of workers with the same length of production service. When textile workers with the same length of time in their job compete with one another, the forces are equal, and the person who works with the greatest energy and the most initiative wins.

We devote a great deal of attention to the enterprises that are lagging behind. We have created staff for working with them as part of the party gorkom. The staff meetings, as a rule, are held in various places so that a wide range of enterprise workers can participate in them. They are preceded by a comprehensive investigation of production. Staff members are informed of the results of the investigation, and then managers and production specialists speak. On the basis of the discussion recommendations are developed, and the staff subsequently supervises their implementation.

The attention of the rayon newspaper has been drawn to the enterprises that are lagging behind. It has a column entitled "The Enterprise is Behind -- What has Been Done?"

We once took some agricultural specialists of the rayon to the Pavlovo-Pokrovsk plant to demonstrate the organization of textile production. While before this the managers of the agricultural enterprises boldly asked for sometimes 500, sometimes 1,000 men to help them, they now submit these requests much more cautiously: they have seen how high the labor intensiveness is in textile factories.

Here are some figures which show this: 80.5 percent of the weavers and spinners of the rayon work with a so-called above-standard load, that is, they handle more looms and spinning machines than are stipulated by the branch normative, and they have a higher yield of products from the equipment.

Of course there are still some organizational reserves. Not all of the young workers are keeping up with the norms. But the main path for further development of textile production is linked to technical progress.

A. M. Dmitriyev: At the Pavlovo-Pokrovsk factory every weaver handles an average of 24 looms when producing satin, and 25 when producing calico. This is higher than the level of progressive average branch normatives (normative -- 18 looms). This is the way the work is done by those who actually load the machines, that is, those who put the spool of thread in the weft. And with the automatic pneumofoil looms (ATPR) each weaver handles an average of 48-56

machines, while the norm is 36. Our renowned worker, Zinaida Pryakhina, expanded her service zone to 66 looms. From the new looms we receive 3.6 meters of fabric an hour, and from the old shuttle looms -- 2.7 meters. And another plus is that it takes fewer workers to service them.

As you can see, there are good looms! But there are clearly not enough of them. If the Klimov machine building plant, which created these looms, cannot satisfy the needs of the branch for them, why not enlist other plants in their production? Technical re-equipment is being held up because of a shortage of them. In the textile industry one cannot renovate spinning equipment weaving equipment separately since these technological processes are inseparably interconnected. The shuttle looms work with spools, while the pneumofolts work with bobbins. The pneumatic looms of the BD type wind such a large load of yarn on the bobbins that it is enough for a half shift or more, and if the thread is fine, it is enough for 16 hours. And the occupations of bobbin and spool winders are dying out in spinning. But because of the fact that it is necessary to use many obsolete shuttle looms, we cannot transfer spinning over to modern machines and we have been forced to put up with low labor productivity in this industry.

About 72 percent of the old equipment at the factory is for weaving, and much of it is 30 years old. According to the plan, we need 2,000 machines of the ATPR type, but we have received only 750.

The renovation of production premises is also advancing slowly. Twice we have been included in the plan and then crossed out because of a lack of capital investments. When we got ahold of the money, the builders of Glavmosoblstroy began to drag their feet -- they do not want to take a contract for our facilities because they are labor-intensive and they are not large.

In a situation like this there is nothing for us to do but to try to conduct the renovation with our own forces -- in small volumes with funds for capital repair. Since the renovation we have acquired a total of 26,000 additional square meters of production and nonproduction space. This will make it possible to introduce new spinning machines of the BD type and to increase the production volume by 14 percent and labor productivity by 23.7 percent.

But nonetheless it is difficult and not always expedient to carry out the renovation with our own forces. Having taken on such a large burden, we neglect the upkeep on the factory's housing. And nobody will do this work for us either. Therefore most of the construction work during renovation must be performed centrally, by specialized contracting organizations.

During the course of the renovation we arrived at one very important conviction: one does not have to wreck everything at the old textile enterprises and start construction from the beginning. The GIP-8 Institute did a plan for renovation of the weaving building for us, with the work costing 50 million rubles. But when we worked with GPI-7 and the Central Planning and Design Technological Bureau (Kalinin), we came to the conclusion that the obsolete buildings can be retained and modernized, they can be made attractive, and conditions can be created for increasing the labor

productivity of the collectives and the workers working in them. With these 50 million rubles we renovated both the spinning and the weaving facilities, with the introduction of 26,000 additional square meters.

Yu. N. Surin: Yes, our experience also confirms that in renovation a good deal depends on the planners. The plans of institutes No 1 and No 8 differ appreciably in their levels. I have worked for 12 years at the Chaykov silk combine. The technical specifications for its renovation were developed by institute No 1. It was an excellent plan; everything was taken into account and envisioned. The factory imeni Sverdlov, of which I am now in charge, had to take advantage of the services of institute No 8. In the new building through which you all passed the planning is very poorly thought out.

In this conference hall where we are now meeting I have had two occasions to report to the bureau of the CPSU gorkom about the assimilation of the planned capacities. I am very sorry that the director of the planning institute or the head engineer of the plan was not standing next to me at those times. It seems to me that they too should bear some responsibility for the assimilation of the capacities.

T. P. Miryasova: It should be mandatory to envision in the plans the use of technical equipment of the future. The institutes are not always prepared for this. Mosoblkhllopprom has drawn up a program for the development of the industrial association and its enterprises up to the year 2000. And what happened? The program extends to the third millenium and it includes technical equipment of 1983, which does not suit us even today, particularly the spinning equipment.

M. I. Drozdova: There are also great difficulties with the dying equipment in the subbranch for textile haberdashery. For example, we do a poor job of dying the knitted ribbon that is used by footwear workers. Machine builders have created the new KM-10 dying machine. It was tested at the Glukhov combine, but it has not been put into production since it did not turn out to be very effective.

A. K. Sokolov: I should like to discuss a problem that arises every time technical equipment is replaced or modernized: repair and spare parts, especially for imported equipment. Until recently we have had difficulties with spare parts for imported Japanese equipment. Now we are afraid that the same situation will arise with the Belgian and French equipment that was installed in a recently built shop.

A. P. Makeyev: Purchasing foreign equipment is quite a reasonable thing, and all countries do it. International specialization, cooperation and division of labor are developing and will continue to develop. But in this connection there arise a number of problems with purchasing batching items, acquiring spare parts and components, and the time periods for updating the equipment. In our association we have foreign machines which have not been produced by the firms for a long time, and spare parts are not being produced for them either. Either these machines should be replaced, the production of spare parts to repair them should be centrally organized.



## Equipment Becomes More Expensive; Output-Capital Ratio Drops

EKO: How do re-equipment and renovation affect the output-capital ratio?

A. M. Dmitriyev: Since equipment is becoming more expensive and its productivity is not increasing at the same rates, the return from fixed capital is declining. Many will probably recall that at one time there was a movement for increasing the yield of products per square meter of production space. Machines occupied all of the space, right down to the passageways and employees facilities. The equipment was packed in so densely that there was not even room for the shop transportation to move. Understandably, the sanitary and epidemiological station will not allow this any more: the requirements for working conditions have increased and sanitary norms have become stricter. But the equipment itself has become heavier and more cumbersome. Even a good ATPR machine is larger, more expensive and more energy-intensive than the one that preceded it. Instead of 420 ATK machines, we have only 350 ATPR's in one shop, and as a result, little was gained in productivity.

A. K. Sokolov: The Rakhmanovka silk combine specializes in the output of fabrics for sieves. After renovation our capital will more than double, but the volume of products will remain at the previous level. True, as a result of the assimilation of new sieves which are just as good as those acquired in a number of foreign countries, the national economy will receive a great economic effect. These sieves make it possible to increase first-grade flour production 4-5-fold as compared to other domestic sieves. There is no longer a need to use foreign currency to purchase them. It is necessary for the effect for the consumer to be taken into account when setting prices.

Yu. N. Surin: In 1978 the factory imeni Sverdlov had an output-capital ratio of 3 rubles 25 kopecks per ruble of fixed capital, and now it is 1 ruble 90 kopecks. Of course we must not forget that the buildings and structures of the old factories have become so decrepit that they are not worth anything at all. And the equipment has not been updated for decades. Our old Jacquard looms are about 100 years old ...

V. G. Bondarenko: One cannot use as a point of reference equipment that has been in operation for tens and hundreds of years. The conditions for the labor of the workers are improving. New sanitation norms make it necessary to increase the air exchange in the shops several times over, which requires new ventilation and air conditioning equipment. Moreover, the new technological processes consume a large additional quantity of compressed air. It is quite explicable why the cost of capital will increase. All the more reason why there should not be a situation in which the prices of the machines increase several-fold and the productivity increases insignificantly. The cost of the equipment should be commensurable with the results of its operation.

EKO: We should like to hear something else about technical re-equipment and renovation -- how they affect product quality.

S. I. Ratnikov: The subbranch of textile haberdashery has received many good machines that are domestically produced which make it possible to produce high-quality items, and it has purchased a few kinds of equipment through imports. But further purchases abroad are limited, primarily because of economic considerations. Therefore machine builders are faced as usual with the task of creating for us equipment that is equal to the world level.

Many facts show that this task is realistic. The Orsha plant, for example, has developed a machine of the 16th class. But so far there is not a single model of it in existence. If we were to receive no less than 100 machines a year we would be able to satisfy the demand for the kind of curtain fabric that is required by the clients. The Orsha workers have promised to manufacture only 50 of these machines in 1984. As a result, it will take longer to equip our enterprises, and this leads to undesirable consequences. For now machines of the 6th class are used to manufacture curtain fabric. They can produce only a limited number of patterns and they produce fabric with a simplified structure. And the consumer wants many interesting drawings.

The consumers are displaying an interest in items made of embroidered unbleached cloth--blouses, dresses and so forth. Unfortunately, the new embroidering machines produced by the Poltava plant are approximately 20 percent less productive than the old ones.

In the subbranch for textile haberdashery items are being created to beautify people's lives. Therefore great creative forces of artist-designers who regularly work on updating the assortment are concentrated here. But what is the point of their developments if we cannot produce them in a mass assortment?

Yu. N. Surin: Another problem is that after renovation and technical re-equipment they immediately increase the plan for production volume, even if the plans envision quite different goals -- improvement of working conditions, or improvement of product quality. Our factory, for example, barely managed to put into operation the new building where the weaving production was to be moved from its old building which had been in existence for 150 before its plan for meters was increased. Custom weaving could die out because of the drive for large numbers of meters. It must be retained no matter what, for otherwise we will be forced to purchase Jacquard fabrics from abroad for foreign currency.

The STB-250 shuttleless automated looms that have been installed in the weaving building undoubtedly provide for greater productivity. But they make it possible to produce Jacquard fabrics mainly in combinations of two colors, while on the old Jacquard machines one could produce a combination of six or seven colors. In essence there is no replacement for the device for producing large pattern fabrics which was invented more than 140 years ago by the French weaver and mechanic Jacquard. This device makes it possible to use perforated cards to control separately the distribution of each thread or group of threads and to obtain complicated patterns and interweavings.

But what is the solution? It is necessary to have a modern shuttle loom for custom fabrics. True, I did not see one in the last international exhibition, Interlegmash, where textile equipment produced by western firms was exhibited. As long as there is no such loom it is necessary to take a cautious approach to the replacement of old equipment and not rush for quantity, but take all necessary measures to preserve the unique weaving production. But when increased production volumes are planned for us, there is no choice but to bring youth into the new weaving building and increase these volumes, although it would be much more reasonable to put the newcomers through the school of work with unique weaving, side by side with our remarkable staff weavers.

EKO: And how do your cooperating enterprises and suppliers influence the product quality?

T. P. Miryasova: There has been a marked decline in the quality of cotton because of machine harvesting. But we are no longer complaining about that. Even if it is not the best raw material, if only it would come in regularly! The fourth quarter is the most pleasant for textile workers. During this time we work with the highest grades of cotton from the new harvest, and we receive plenty of it. But in the summer we have an insufficient supply of raw material. This has nothing to do with quality.

A. K. Sokolov: The difficulties with material and technical supply are worsened by the branch system of planning. For example, our Rakhmanovka combine, the factory imeni Ya. M. Sverdlov and other silk enterprises come up against the fact that the paper industry has completely stopped producing Jacquard cardboard. Other kinds of cardboard will not do for us.

M. I. Drozdova: And when there are interruptions in the deliveries of raw and processed materials the supplier enterprises and the manufacturer enterprises are in unequal positions since the fines for delivery failures do not cover the losses. For example, men's suspenders are now in short supply since women have started wearing them with blouses. In order for the suspenders to be attractive it is necessary to have elastic in at least 3-4 colors. But the Barnaul chemical combine, in spite of its delivery agreement, sends containers of only white elastic.

L. G. Romanenko: Dyes are especially important in textile production. The chemical industry is not satisfying our demands, either for quantity or for quality. If imported dyes are purchased, they usually arrive late.

What Does the Consumer Demand?

EKO: The branch's main task is to satisfy consumer demand. What is being done to satisfy it, how is it being studied and taken into account, and how is the collaboration between textile workers and trade arranged?

N. R. Shabalina: Allow me, a trade representative, an intermediary between the consumer and manufacturer, to answer this question.

I have worked in trade for a long time. I remember a time when the assortment of goods could be counted on your fingers. Now it is large and varied. The trade organization has become more complicated and the structure of commodity turnover has changed. While previously everything sold immediately, now it is more difficult to sell items. The diversity of supply forms higher demands.

Nonbranch factors also influence the sale of fabrics, for example the cost of sewing. It has increased so much that people do not want to have things sewn. And they are also afraid that this will disfigure the article. Remember Raykin's miniature?

Let us say that the Pavlovskiy Posad worsted combine produces good suit fabric, although, perhaps, the colors are not interesting enough (it has difficulties with dyes). They are not expensive. Cutting the fabric for an ordinary suit costs half as much as the sewing. We have sold these fabrics to Finland. There they did not remain on the counters for more than 5 minutes since they are so inexpensive. They were bought for factory sewing, and good suits were made from them which were quickly sold out. But here they are collecting dust in the warehouses.

It is even more difficult to sell acetate fabrics. According to responses from the consumers, they lose their good appearance with the first washing.

L. G. Romanenko: Indeed, there is no demand for acetate fabrics. But I think the attitude toward them is wrong. The sewing workers will not accept them because these fabrics are inexpensive and it is disadvantageous to sew with them. There are no dresses of acetate silk in the GUM. I asked, "Why not?" They told me: "The sewing workers will not send them to us."

You see there is no meeting ground between the sewing workers and textile production even though we are under the same union-republic USSR Ministry of Light Industry! I must say that at the wholesale fair where we determined the demand there was not a single complaint about acetate fabrics.

S. I. Ratnikov: Studying demand is a problem of problems. This might be a very bold statement, but I think that nobody is engaging in a study of the demand. Trade does not give us information. There is no institute from which we could obtain exhaustive information.

EKO: There is an institute which is supposed to deal with this -- the Institute for Study of Market Conditions for Trade and Demand of the USSR Ministry of Trade. Perhaps it is operating poorly?

S. I. Ratnikov: I cannot give an evaluation of its work, but the fact is that we do not receive the necessary information from it. We do not know what is being done with our products or where they are being kept. It is necessary in some stage to have some kind of stop sign -- a warning that it is time to stop producing an item. But we are faced with statements like: today we do not need it, do not send it, we will not take it!

EKO: Do you have firm stores?

S. I. Ratnikov: So far, no, but they want to open two stores in Moscow....

In the difficult situation in which textile enterprises and our trade partners have ended up, the role of wholesale bases should be increased. To this day their functions cannot be understood. They are limited to what is written on the orders. After that, the supplier himself must work with the stores which receive the orders. The question arises: have the bases not lightened their tasks a little too much? And in this case are they needed at all? Obviously, they are still necessary. And here is why. Representatives of the stores, when they come to the factory, select products in small batches -- broken down into various patterns and colors. Where is the sorting to be done? The factory does not have the necessary conditions for this. At each of our enterprises we have two merchants and several loaders. In order to sort products at the factory it would be necessary to increase the number of packers, for this work is manual. Machine builders have not created a single automated machine for packing. All this complicates our work. And the wholesale bases have warehouses and staffs who could do the sorting so as to deliver the products in small batches. But they refuse these functions. So would it not be better to transfer their staffs to the enterprises so that they could handle the sorting appropriately?

Yu. N. Surin: It seems to me that in general the bases are superfluous. They issue orders and they do not have to worry about anything more than that. We need direct ties with the consumers, and work under direct contracts with trade and the sewing enterprises.

N. R. Shabalina: If all the products were sold as quickly as Jacquard fabrics of the factory imeni Sverdlov are, we would not have to discuss the problem of wholesale bases.

But curtain material is another matter. Now nobody will buy it, especially net. It has filled all the warehouse facilities and will lie around waiting to be marked down. And who has thought about how much the mark-down will cost the state?

We have been told that trade does a poor job of studying demand. Even in our small trade network there is a special division for studying market conditions and demand. Perhaps we do not study demand thoroughly enough either, but in any case industry does not take our suggestions into account. When at wholesale trade fairs we tell the enterprises: "These products are not worth producing," they reply to us: "We have a production plan, and the trade organizations must adjust to it." That is, the output is dictated not by the consumer and trade, but by industry. Of course we try to defend our point of view and register our disagreements. But when they are resolved by the arbitration boards there are almost no instances in which the decision is in favor of the trade organization.

EKO: But can you not refuse to order anything you do not want?

N. R. Shabalina: If I do not accept some unmarketable good as a "filler," they will not give me what I need. I can name many fabrics which absolutely

will not sell. We keep them around for years. And I am forced to accept more and more of them. In September 1983 we managed to sell some things after marking them down. Now when we sell marked-down products there are more to replace them.

A. P. Makeyev: But it is still correct to say that they do not study demand adequately. Our factory, which has been in existence since 1912, was the first enterprise in the country in scarf production. We annually manufacture 14.8 million meters of pure wool fabric and 24 million meters of cotton. And to this day there is a shortage of cotton scarves. But, because the planning agencies are not sufficiently aware of the demand, the following story has taken place with woolen scarves. For a long time they were in short supply. We renovated the plant, acquired imported equipment, assimilated new planned capacities and ... right then they became overstocked. The fact is that at that time many scarves were being purchased abroad, and a scarf factory went into operation in Kiev. But the main thing is that the prices for woolen scarves rose in 1981.

At the same time, one cannot allow woolen scarves to lie around for very long or else they will be damaged. So in this case it is even more necessary to determine the real demand for these items!

V. G. Bondarenko: According to provisions which are in effect in the country, we work according to orders from trade. Each year we are given notification: how much and what fabrics are required. Consequently, it is assumed that trade has studied the demand. But in practice a paradoxical situation arises. We do not satisfy the demands from trade for the quantity of products, and still no market is found for the fabrics. During the first half of 1983 the RSFSR produced 18 million linear meters of woolen fabrics less than planned, but nonetheless in the second half of the year trade refused mass quantities of deliveries.

This market demand for woolen fabrics arose because youth prefer sports fabrics -- denim and velveteen -- but this is somehow not taken into account in planning.

The judgment that it is necessary to change the functions of wholesale trade is undoubtedly correct. The bases must create seasonal supplies of goods. Let us say that a factory specializes in producing heavy woolen cloth. It is not needed in the summer. All right, let it accumulate. When the right season arrives, go ahead comrade consumers, and select a fabric you like for your coat!

And, finally, price setting. The branch cannot stand on the sidelines when the question of the prices for its products is being resolved. If they were to consult with us we could, for example, express doubts about the expediency of raising prices of scarves, as was done in September 1981 when the price increased by an average of 25-30 percent.

A. P. Makeyev: And the demand dropped immediately. And when this happened, production was left all alone with its problem.

It is necessary for the consumer to determine the prices. Only on the basis of his attitude toward the goods can one establish the real price. How can this be done? It is necessary to have large supporting department stores in which the consumers are offered all the new goods. And on the basis of their attitude toward the innovations one should establish prices for when the goods go into mass production.

M. I. Drozdova: Our system of price setting is inflexible and cumbersome. The enterprises suffer a great deal from this. Each year we update the assortment by approximately half. Taking a long time to establish technical specifications and prices seriously impedes this work.

First we look at a new item in our technical council and then in the Gospromtekstil'galanterey. After this, technical specifications are developed for its production. It takes 3 months to approve them. Then 2 weeks each are spent on coordinating with the enterprise and the scientific research institute, and after this it takes 12 days for registration with the Gosstandart. After the technical specifications are approved, it is also necessary to approve the description of the item. Again a minimum of 2 weeks. Then there is the approval of the prices in the State Committee for Prices and the Moscow Oblispolkom... A total of 6 months pass. During this time the item can become obsolete.

EKO: What should be done?

M. I. Drozdova: The time periods should be reduced everywhere. Why, for example, should the Gosstandart inspection team take 2 weeks with the technical specifications.

V. G. Bondarenko: All the concerned parties could be brought together to approve the specifications and the price of the item. This, incidentally, is the procedure for approving products for the Emblem of Quality.

M. I. Drozdova: Products for the enterprises (for us this is industrial tape) could be produced at prices upon which they agree beforehand.

A. K. Sokolov: Before setting permanent prices it is also possible to use agreed-upon prices for fabrics for sieves. Otherwise the inflexible system of price setting will always impede production.

To the Controllers -- Yes, to the Machine -- No

EKO: Raising the technical level of the branch and increasing the demands made on its products advance new tasks for its personnel. How is the personnel problem being resolved?

T. P. Miryasova: Before coming here I looked up a couple of figures. Our industrial association, Moskhlopprom, includes the majority of enterprises of Moscow and Moscow Oblast which produce cotton fabric. By the beginning of the 11th Five-Year Plan the number of industrial production personnel amounted to 132,000 and today it is 100,000, that is, it has decreased by more than 25

percent. We have taken many measures to preserve production volumes in this situation. During 10 years labor productivity in rubles has increased by 41 percent, and in physical indicators during 5 years it has increased by 44 percent in spinning and 95 percent in weaving.

As far as we know, there is a shortage of personnel in flowline and conveyor productions not only in the textile industry, but also in machine building and other branches.

A. M. Dmitriyev: At one time, when Taisiya Petrovna Miryasova was director of the Pavlovo-Pokrovsk cotton factory, she tried to enlist men to work on the pneumomechanical spinning machines. Later we repeated this attempt and began to invite students in the senior classes of secondary schools to train during the summer. When you speak with the boys and girls they say that they like the work. But still none of them came to work on the machines after school. They entered the repair-mechanics and other service subdivisions.

V. G. Bondarenko: Men cannot take the kind of load that exists now. The monotony is much worse on them. Look at any conveyor or flowline production and you will find working there mainly women and young people who are waiting until they go into the Army, that, is, until they acquire an occupation.

T. P. Miryasova: Textile workers have many monotonous and unvaried operations. Science has not created a single model of robot equipment for us. And many processes and sections of textile production are not being dealt with at all by scientists and machine builders, for example, twisting and winding operations. The sweeping and cleaning of the machines are also still being done by hand. The level of manual labor in textile enterprises is about 30 percent.

Yu. N. Surin: There are tedious operations such as, for example, separating the thread. In Ivanovo 15 years ago they tested an automatic thread separating machine, but it is not in production yet. At one time they talked about a laser beam for control. We have not received any laser control instruments either.

T. P. Miryasova: We have spent too much time on the work given to the women in the main occupations and we have skipped over other processes. For example, the spinners were initially assigned 1,000 spindles, and then it was 2,000. Next to them are working the electrician and the handiman, and they have incomparably smaller loads. This is absolutely wrong, and it leads to a situation where the youth lose their desire to go to those working positions where the products are actually produced. Textile production needs new technological systems that use robots and manipulators and have a high level of mechanization and automation of production. If the level of technical equipment remains the same until the year 2000, it cannot be understood how the branch will develop further.

Yu. N. Surin: The personnel problem is indeed the most crucial one for us now. Youth are frightened away from the textile industry by the intensiveness



of the work, the 3-shift working conditions, and the sliding schedule of days off. After all, nearby there are enterprises that operate on two and sometimes only one shift, and they rest on Saturday and Sunday. In 1982 57 weavers left us and only three came from the local population. In 1983 only two came. In essence, the factories are now surviving on imported labor force. It is necessary to be building dormitories constantly and taking resources away from the construction of residential buildings for regular personnel.

It seems to me that it is necessary to enlist machine designers, physiologists, sociologists, economists and other scientific workers and think along with them about how to draw youth to the textile occupations.

EKO: But where do the youth go?

Yu. N. Surin: They become accountants, controllers, or whatever they can, as long as it does not involve a loom.

EKO: The facts which you give show that now as never before there is a strengthening of the interconnection, the direct and reverse influence of technical progress and social factors on the development of public production and the indicators of effectiveness. What is being done on the social plane and what needs to be done in order to solve the personnel problem?

Z.V.Zakharova: Yes, so far the collectives of the city's enterprises are still being filled with labor resources from other areas -- Bashkiriya, Mordovia, and even Buryatiya and Kirghizia, even though there are many youth in the rayon and the city. In 1981 816 people completed the secondary schools and 115 went into textile work, in 1982 -- 102 out of 676, and in 1983 (9 months) 53 out of 666. And even if they go to the factory, this still does not mean that they will be working at a loom or spinning machine. They are not entering the vocational and technical schools where they would master these occupations, but are trying to land jobs as accountants or laboratory workers.

What is keeping us from attracting the indigenous population? Our enterprises conduct occupational orientation work and they work with the senior classes in the schools. But all the occupational orientation work through the schools, training-production combines and vocational and technical schools amounts to nothing if the textile worker arrives home tired and warns her daughter: "There is nothing for you at the factory." Of course we do have labor dynasties, but not enough of them.

Taking into account the aggravation of the personnel problem, the city party committee has developed a special program for working with personnel. In March 1983 a plenum of the CPSU gorkom was devoted to it. The program embraces all aspects -- technical re-equipment, the development of collective forms of labor organization, improvement of working and living conditions, and so forth.

Yu. N. Surin: One of the most crucial social problems for us is the utilization of the labor of textile workers who have reached pension age, and how to provide payment and incentives for it. We have 490 pensioners working in the factory. They have been given many benefits and time has been added to their vacations. But the ceiling on wages at 300 rubles spoils everything, and impedes the work progress of people of pension age. The pension for a weaver can be 132 rubles (with the appropriate length of service) and she can agree to earn 168. She will not enter a brigade. She does not need earnings of more than 200 rubles for if she earns this much her pension will be cut. Nor is she interested in progressive service normatives, and she will not add a single little machine to her load. In IZVESTIYA in September 1983 there was a good article on the problems of utilizing the labor of pensioners. It discussed the fact that for them bonuses are not incentives, but penalties. And this is true. It is necessary to revise the provisions concerning payment for the labor of pensioners.

A. K. Sokolov: A couple of figures for consideration. Of the 1,400 people working at the Rakhmanovka combine there are 288 pensioners, and 67 of them are weavers. Today we are short a total of 62 weavers. The need for weavers will be reduced by 42 people after the completion of the renovation. So at the given moment we are basically finding a solution to the problem of labor resources. But we do not know what we shall do when the pensioners and those skilled workers who are approaching pension age leave. And they will leave unless we change their wage conditions.

P. V. Alekseyev: The demographic situation is of great significance. In the regions where textile enterprises are located there are not enough industries which require male labor. This too causes labor turnover because, after all, people must mingle and create families. It is also fair to raise here the question of the change in the status of individual occupations. These problems are being studied by the State Committee for Labor and Social Problems.

#### Three-Shift Work: A Necessity or a Tradition?

EKO: When we visited the factory imeni Sverdlov our attention was drawn to the fact and a number of machines were standing idle in the new shop. It turns out that there were not enough workers. So would it not be better to staff two shifts completely than to have equipment standing idle on each of the three? This would bring both a social and an economic advantage.

A. M. Dmitriyev: It seems to me that it is time to consider the question of changing our branch over to two-shift work. The majority of workers at textile enterprises are women. Many of them leave their jobs because they do not like shift work, especially women with children. During 10 years the number of workers at the factory has decreased by 1,000, and during 10 months of 1983 it dropped by another 260. Life is leading us to the conclusion that we must solve the problem of having textile workers work on two shifts with all of them having the same days off -- Saturday and Sunday. Young people do not want to take a three-shift job. Eliminating the night shift would not only save us, but would also contribute to retaining personnel.

M. I. Drozdova: More than 10 years ago our factory began to change over to working on two shifts. We were changing over to this schedule gradually, as conditions were created for increasing the output of products. The enterprise is 116 years old. It was necessary to do a large amount of work for renovation. Now the necessary conditions have been created for the workers. A modern facility for personal needs and two dining rooms have been constructed, and the shops have been attractively arranged.

In April 1981 the factory began to introduce brigade forms of labor organization with payment for the final result. These encompassed 76 percent of the workers. Above all, labor productivity increased. On an average for the brigades, the output was 15-20 percent higher than for workers with individual piece-rate wages. Labor discipline improved. Among the workers in the brigades there were almost no violators of labor discipline.

We removed the third shift gradually -- component by component, brigade by brigade, as higher production volumes were assimilated. We did this work ourselves, at our own risk, without the knowledge of the republic industrial association. To be honest, we suffered a great deal of anxiety: what if suddenly it does not work? But none of the production indicators became worse. The plan was being fulfilled. People forgot about the third shift and there was no returning to it. Both the economic and the social consequences turned out to be favorable: labor turnover decreased.

V. G. Bondarenko: Machine builders work with a coefficient of shift work of 1.3 and, judging from everything, they are not experiencing a need to increase the amount of shift work. We have three shifts, and we still cannot see how we can change over to two-shift work without more productive equipment.

T. P. Miryasova: If we receive more productive equipment so that our capacities will increase, in the future it will be possible for us to change over to two-shift work with the same schedule of days off for everyone.

Our Moscow enterprises have introduced the same vacation times for the whole shift. The workers liked this innovation. It is also possible for us to change over to two-shift work, but we must prepare for this.

#### The Brigade Form: Circumspection is Needed

EKO: The experience of the Krasnaya lenta factory, which Mariya Ivanovna Drozdova has discussed here, shows that among the factors contributing to increasing labor productivity and creating prerequisites for changing over to two-shift work, a large role is played by collective organization of labor. We should like to hear how the decree of the CPSU Central Committee concerning improvement of brigade forms of labor organization is being implemented and how it is being developed at other textile enterprises.

L. G. Romanenko: In 1983 the shortage of workers in Rospromshelk increased by 2,000 people. Still it fulfilled the plan. We think that brigade organization of labor helped a great deal in this. It includes 54.3 percent of the workers at enterprises of our republic association.

Experience shows that brigades working for the final product should be created in places where it is possible to provide for rhythmic work and stable material and technical supply. In the new stage of collective forms of labor organization it is also necessary for engineering and technical personnel to become more active. Each brigade should have assigned to it an engineering and technical worker who would be responsible for the organization and conditions for the work of the brigade. The incentives for his work should depend on the results of the labor of the collective of which he is in charge. At those organizations of Rospromshelk where the organization of brigades has been approached in this way, there is order and there is satisfaction with the results.

S. I. Ratnikov: In the subbranch of textile haberdashery more than half of the brigades are working on a unified contract. We are aware that the first stage was relatively easy, since we managed to combine the most active parts of the workers into brigades. More difficult problems are arising now, since it will be necessary to organize the less active people in this way.

Augmenting the brigades with youth and newcomers is a difficult problem. We need scientific recommendations.

We will apparently not be able to increase the number of brigades at more rapid rates. We have a certain amount of circumspection. I think that it is necessary to reinforce the collectives that have already been created and create conditions for organizing new ones.

R. I. Kudryatseva: It is difficult for me to speak about the effectiveness of brigade forms throughout all of our worsted combine. As a weaver, I am more aware of the situation in the weaving production. Previously we had small brigades: two weavers and one assistant foreman, whose functions included maintaining the equipment in working condition. Now a brigade consists of six weavers and three assistant foremen. We all have the same production assignment. If a member of the brigade is absent, we replace him. The skills of the young workers improve more rapidly in the brigade. Tutorship proceeds better. This is useful for production. But under the new conditions for payment we lose money because they do not take into account down time caused by a lack of raw material. We should be uniformly supplied with yarn, because then we will be able to work rhythmically and our wages will be higher.

V. A. Yegrashkina: The story is the same in spinning production at the Pavlovo-Pokrovsk factory. We are not reimbursed for down time, although the spinning machines are stopped fairly frequently because of electric power shortages. Now we must somehow make up for the down time or else our earnings will decrease. Sometimes we work overtime.

EKO: Did the association form brigades voluntarily?

V. A. Yegrashkina: Yes, it was voluntary. We were gathered together and the working conditions were explained to us.

EKO: Did the earnings decrease for the entire brigade?

V. A. Yegrashkina: No, wages did not decrease for the brigade as a whole. Only for the spinners who previously had higher output did the earnings decrease. And this, of course, should not be allowed. On the contrary, the best individual results of the leading workers should be a point of reference for other workers. But in other respects the influence of brigade forms has been fruitful -- there is generally more order, and transport and subsidiary workers are working better.

T. I. Miryasova: The difficulties of the brigades are related to shortcomings in the work of shop chiefs, shift foremen and workers in the divisions. The fact is that previously an output norm was established for each spinner or weaver, while now the brigade receives an assignment for the final product. The sum of the planned assignments for the brigades is the plan for the shift. Raisa Ivanovna Kudryatseva said quite correctly that it is necessary to prepare the work of the brigades -- to improve engineering support and material and technical supply. The decree of the CPSU Central Committee concerning brigades draws the attention of managers to this. Then the output will be higher and the wages will not drop.

Comprehensive all-around brigades, which include the entire chain from the initial operation to the final one, are effective. They are motivated to achieve a good final result, and therefore they themselves make sure that the workers associated with them are not left without a work front.

In the Moskhlopprom association about 60 percent of the workers are combined into brigades. Because of them, while the number of workers has been reduced somewhat, we have managed not to reduce the production volumes. We assume that we shall be able to produce a 2-3-percent increase in output because of extensive dissemination of collective forms of labor organization.

A. G. Aganbegyan: Let us sum up the results of the discussion. In your statements you gave comprehensive and substantiated consideration to three groups of problems. The first of them is related to technical re-equipment, problems of increasing labor productivity and the influence of machine building. Many useful suggestions have been made, both concrete ones -- concerning the creation of certain kinds of machines -- and general ones -- concerning the technical image of the branch in the future, the development of modern technological systems, and the application of robot technology in the textile industry. Without this it is apparently inconceivable to have further development of textile production.

You have correctly raised the question of the tasks and goals of renovation, and the responsibility of the developers for the level of the plans and the production capacities created on the basis of them.

The second group of problems which has evoked heated and absorbing polemics involves improving product quality in the broad sense of the word and more fully satisfying the demands of the people. Here we should like to single out the proposals to revise interrelations between trade and industry, to clarify the role of each party, to increase the responsibility of wholesale bases, to improve study of the demand, and to give better justification for prices.

And, finally, the third most important group of problems include the social conditions for labor, work schedules, night shifts and retaining personnel. We must not forget the fact that the textile industry is a branch with primarily female labor. Questions of housing, occupational orientation and attraction of youth are crucial.

There are a number of factors which can be utilized to achieve an effect in a relatively short period of time without any special capital expenditures. The party is consistently following a course toward improving organization and labor discipline. The organizational measures that have been adopted recently have had an essential influence on speeding up the rates of increase in labor productivity. You also have great organizational resources. The experience in increasing labor productivity when changing over to brigade forms is an example of that.

The idea that man is the basis of production passed through many of the statements like a leitmotif. None of the capacities and none of the equipment will produce the proper effect unless more attention is paid to the human factor. All of your statements lead us to such serious cogitation. Today it is extremely necessary to have joint developments by specialists in machine building and the textile industry, sociologists, economists and physiologists regarding the personnel and socio-economic problems of the branch.

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## TEXTILE MACHINE DESIGNER COMMENTS ON ROUND-TABLE STATEMENTS

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 84 pp 61-68

[Article by Yu. D. Kosykh, head designer of the Sibtekstil'mash plant (Novosibirsk): "Speed and Technical Capabilities"]

[Text] We familiarized the manager of one of the leading design collectives of textile machine building, the head designer of the Sibtekstil'mash plant, Yu. D. Kosykh (Novosibirsk) with the statements of the participants in the round-table discussion, and asked him to comment on them.

Indeed, the creators of equipment are in some measure to blame for the lack of coordination of textile productions -- said Yuriy Dmitriyevich -- partially because of the shortage of certain kinds of looms, as at the Pavlovo-Pokrovsk factory. But what seems to me to be more essential and important, which was also discussed at the round table, is the lack of correspondence between the capacities of new weaving and spinning equipment.

We first encountered this problem under extremely interesting circumstances. Our plant received from one of the worsted combines an advertisement for shuttleless looms (STB). When our designers went to that combine and began to figure out what was the matter, it turned out that the textile workers had tried to reduce the speed of the machines but they were unable to because of the high technical specifications of the electric engines. They were motivated to do this because of the lack of coordination of capacities in the weaving and spinning productions. At their request we had to replace the electric engines.

The STB which came to replace the shuttle looms made it possible to increase the output of fabric 2-2.5-fold (and there was also a radical improvement in working conditions: there was no longer the rumbling and noise which had been synonymous with weaving). But the new spinning equipment made it possible to increase productivity only 1.4-1.7-fold as compared to the previous level. As a result the combine was unable to provide sufficient yarn for weaving. Of the 100 STB's, an average of about 40 were always standing idle. And each worker was assigned a certain group of machines. Because of the idle time,

the output and earnings dropped, and weavers began to leave. It was then that they decided at the combine to balance the spinning and weaving productions by this questionable method.

Later we encountered a similar method of eliminating disproportions by reducing the speeds of machines at other factories.

Yet 250 revolutions of the main shaft of the machine per minute is not the highest speed in the world. While rivalling the best analogous models of foreign firms in terms of all other indicators, our STB's have a slower speed. Therefore on the new models created during the last years of the 11th Five-Year Plan we decided to reach 300 revolutions per minute, which is the reference figure of our main competitor, the Swiss firm Sulzer. Because of the tendency toward further increasing the speeds of the looms, increasing the productivity of spinning equipment is one of our essential problems.

In the round-table discussion they quite correctly raised the question of the lack of compatibility between the STB's and the Jacquard devices. Unfortunately, so far there really are no Jacquard looms that are good enough, which would make it possible to retain the indicators of the STB in terms of productivity, with better quality of the fabrics because of the complexity of the weaving using threads in a wide range of colors. On every loom it would be necessary to install two Jacquard devices since they are not adapted to the width of fabric which is achieved on our looms (200-300 centimeters).

For its part, the STB is not ready for simultaneous weaving of thick and thin threads, whereby fabrics with attractive relief patterns are obtained. So perhaps we should indeed create a modern shuttle loom, as is suggested by the director of the silk fabric factory imeni Sverdlov, Yu. N. Surin? After all, we must not lose those unique fabrics for which our textile workers are renowned! In Moscow there is one factory which produces decorative fabrics for restoring historical buildings, where old looms produce only 12-15 centimeters of fabric per hour. But one can hardly agree to working at these speeds today.

Modern speeds and the same technological possibilities of the equipment as before, or perhaps even greater ones for color, designs, relief and durability of the fabrics -- these are the tasks which must be carried out today by the creators of looms. In my opinion, there is no returning to the shuttle. Other paths are needed.

Shuttleless looms are the most universal weaving equipment. They can be equipped with Jacquard devices and carriages with program control, because of which their technological capabilities are expanded. On these machines it is possible to manufacture fabrics from 95 percent of the entire assortment of textile fibers -- from natural to artificial and glass fibers. We have created a machine for producing polypropylene film which serves as a basis for producing wallpapers and nonfabric industrial packaging materials which replace flax (it is known that today millions of meters of linen fabrics are being used for sacks).



Work on improving STB's is proceeding in several directions. The first is to increase productivity by increasing speeds, which I already discussed, as also as a result of increasing the width of the machines. We are specializing in the creation of equipment for producing fabric that is from 200 to 330 centimeters wide, and the Cheboksary plant has a machine for fabric that is 360-390 centimeters wide. It already has an STB model for fabric that is 500 centimeters wide.

In cotton production and the manufacture of certain silk fabrics, machines with pneumatic feed of the weft thread are extremely promising (remember that fabric consists of longitudinal threads of the base and weft threads which are interwoven across them, usually perpendicular to them). The prospects of these machines were confirmed at the international exhibition of textile equipment held in Milan in 1983 where they demonstrated pneumatic machines with a speed of 500-600 revolutions of the shaft per minute. In our country, at the Klimov machine building plant, we have created fairly good automatic pneumofoil machines (ATPR) which were discussed by participants in the round-table discussion. They have a speed of 380-400 revolutions per minute.

The second direction is expansion of the technological capabilities. In my opinion, it should involve equipping the machines with electronic equipment. In conjunction with the Kazakh university, we have developed a design for an electromagnetic brake, which we hope will help to eliminate the restrictions on the weaving the threads of various thicknesses. The Novosibirsk Electrical Equipment Institute is our partner in our work for changing the STB over to control from microprocessors.

In our design bureau we have created an electronic device for controlling the breaking of the thread. Its utilization will make it possible to give a 100-percent guarantee of the quality of the fabric. Unfortunately, we have already spent 5 years solving the problem of who should produce it. Our plant is a machine building plant and it cannot engage in series manufacture of electronic equipment.

In the future new directions will be developed more extensively -- the production of nonfabric materials and combined fabrics made by weaving knitted and textile fibers together. The Metal device for an STB has been created in Czechoslovakia. It is intended for weaving fabrics with knitting thread. One of these devices has successfully undergone testing in our country -- at the Krasnokholmsk worsted combine. But specialists still think that the new materials are not yet able to replace traditional fabrics in satisfying domestic needs. Therefore the task of machine builders and textile workers is to continue working to improve the traditional methods of weaving.

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## WORK OF ENGINEER ADMINISTRATORS DESCRIBED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 84 pp 81-93

[Article by V. N. Krasnokutskiy, candidate of economic sciences, deputy general director for economic problems of the Kamchatrybprom production association (Petropavlovsk-Kamchatskiy): "Engineering-Administrative Labor, Its Prestige and Effectiveness"]

[Text] There is an aspect of labor discipline which is very important, but invisible at first glance -- the quality of the labor of the administrative staff. Many complaints are made about this category of engineering and technical personnel. And, judging from the press, the number of complaints is not decreasing as the years go by. I can see this from the example of the fish industry. Here is what fishermen write in the newspaper KAMCHATSKAYA PRAVDA concerning violations in the work of the fleet: "They will find their own excuses for this every time, but the main thing is still the insufficient responsibility of management personnel and engineering and technical workers."\* Of course this judgment is fairly subjective -- without serious analysis it is difficult to say if this is the main thing or simply one of many things. But the fact that public opinion is more and more frequently arriving at the idea that engineering and technical personnel and employees are not playing a big enough part in production -- this is cause for alarm and anxiety. I should like to share my ideas about how to solve this problem.

About 20 years ago the head engineer of a large Leningrad plant told me that they had created a new division, the design division. It required a chief, a deputy and other personnel. The head engineer went to the personnel department for help. "Nothing could be simpler," they answered, "we have enough specialists of the profile in which you are interested who are employed in working positions. Find them and make them an offer." And they pushed the card file in front of him. Indeed there turned out to be many people who were graduates of prestigious VUZes who were working as lathe operators and metal workers of high categories. At first those who were asked had a burning desire to become involved in the interesting, creative engineering work that

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\*Traumova, G., "Everyone is Responsible," KAMCHATSKAYA PRAVDA, 9 February 1983.

was offered to them. But as soon as the discussion came around to wages, they quickly cooled down: "You are offering me 200 and I am making 250" (I am not trying to make the figures precise, but they were about like that). The engineer lathe operators would not agree to change their occupations ...

The situation being discussed here seemed unnatural to me. On the large freezing fishing trawler on which I happened to be working as a mate at the time, monetary relations were different: the wages of a sailer were 100 rubles, an engine operator -- 115, a boatswain -- 135, and the captain-director -- 220. This was a time rate, that is, during movement, mooring and other nonindustrial operations. In the region where the fish were caught they were paid a piece rate, with their shares amounting to 1.00, 1.15, 1.35 and 2.20, respectively. If this system of payment did not seem ideal to me, at least it reflected fully enough the contribution of each participant in the production process to the overall result. I told this to the head engineer and was interested in knowing why at their enterprises the wages of the engineer and even the division chief were lower than those of the worker, even if he might be a skilled one. The person with whom I was speaking was also surprised by the question posed this way -- it had become so accepted that the payment for the labor of a worker would be higher than that of an engineer.

Since that time I have completed the economics department of the institute and graduate school and have defended my dissertation, but I have not come very close to answering my own question. And even today I cannot answer with complete confidence the questions: was there an objective need to reduce the role of the engineer, was this done deliberately or did it happen spontaneously, and should this measure be regarded as an economic mistake?

It is known that previously the situation was different. In 1940 in industry the earnings of engineering and technical personnel were more than twice as high as the average wages of workers. And in those days the engineer (like, incidentally, the physician and the teacher) was a respected individual. Now when forming brigades for, say, agricultural work or a vegetable base where high qualifications are not required, the manager does not have to think long about whom to send. The engineer, of course! You cannot send a skilled labor -- the machine tool or the conveyor will stop. It is impossible to replace a worker at a machine tool -- not every engineer knows even how to approach it. In the "development" of this direction, we (the Kamchatrybprom production association) are introducing an even more "progressive" form of utilization of engineering and technical personnel -- we are creating brigades of stevedores of the fishing port from workers of the association's administrative staff ...

As before, many self-respecting and talented engineers are going to work as laborers and taxi drivers, weaving baskets or decorating purses, or at best they are working as tutors. In addition to the fact that it is a great luxury, at least in the modern stage of development of socialism, to have engineers as laborers, far from the most talented VUZ graduates today become engineering and technical personnel. Just as it is not the most talented students of secondary schools who enter VTUZes. And since they are not very talented, it takes three to do the work of one. Is this not why a 5-minute

job which requires a decision from a rank-and-file engineer sometimes takes months being passed from one worker to another, a mountain of paperwork and a mass of resolutions grow up, and it reaches the highest levels, taking up the valuable time of the manager?

But there is another side to "programmed incompetence." Man is by nature an active being, and he is incapable of doing nothing throughout the working day. If he is not capable of creative labor (and the circumstances allow far from everyone to play chess during work time), he finds a noncreative outlet for his energy -- orders, instructions and measures. It is all right if he is on the lower rung of the administrative ladder: let him write as long as he does not keep others from working... But the higher he rises, the larger the number of people who are included in the "circulation" of his paperwork. Indeed, his orders and instructions require the publication of similar documents at all the lower levels. Some of this "output" is clearly unnecessary and only makes the work of the production sections more difficult.

I shall give an example. At the beginning of my career, when I was working as a third mate, I would spend 2-4 hours to fill out the documentation for the departure of the ship. Six documents had to be shown to the port inspector. "Twenty years later" the list has grown to five pages and includes about 40 sections.

Including only some of the new objects for inspection and control is, perhaps, logical in its own way. For instance, "navigation maps" are necessary if the captain is so absent-minded that he forgets to take them with him on the trip. The "document of the commission for inspecting commercial ships for readiness to depart," possible, is also necessary: suddenly the captain has completely lost sight of the purpose of the trip and has not prepared the ships for operation. The "excerpt from the order of Kamchatrybprom concerning the official assignment of the captain-director, first assistant, senior mechanic and production chief" -- this too can be understood: it is undoubtedly necessary to securely close off the path to those who would lay claim to the captain's bridge! But why do they need the "order to allow the commanding officers to stand watch independently"? For it is known that only people who are specialists with diplomas and certificates in the theory and practice of maritime disciplines are assigned to ships as captain-directors, instructors, mechanics and so forth. But the conditions for standing watch alone are defined clearly, point by point, in the service regulations and the commercial navigation code. Why is the ship inspected for the same things three times before departure -- by the maritime inspection of the fleet base, Dal'gosrybinspektsiya and the port authorities (taking approximately 4-6 hours each)? Similar "whys and wherefores" can be raised regarding many other documents on the list. Apparently its authors are capable of arguing convincingly for their position and the vital necessity of it. But still the number of positions has increased 7-fold!

According to information from the chief of the trawling fleet base of Kamchatrybprom, the net amount of time spent on inspecting the floating bases before they go to sea is 35 hours, under the condition that everything goes well and it is not necessary to eliminate any shortcomings. A ship's entry into port is a real disaster for the chief, and therefore the floating bases

sometimes go for years without seeing the native shores of "registration." Instead of greeting it festively, with the honor of victors, and balance commissions with an analysis of its achievements and omissions, there are "pirate raids," and stopping somewhere outside the country where the controlling hand of the port supervisor cannot reach, or else a partial change of crew at sea.

It is probably not worth discussing the foreign practice of documenting ships, where the departure takes a quarter of an hour, including coffee. Previously, we solved these problems for ourselves much more simply. Of course, the fleet is growing quantitatively and qualitatively, but still the "landslide of all kinds of directives, requirements, reports and certificates," as was noted at the June (1983) Plenum of the CPSU Central Committee, does not help things, "it is necessary to get away from this kind of bureaucratic style, and as quickly as possible."

As a reaction to the lack of necessity of some of the "directive output," it is sometimes ignored. I have before me an analysis of the executive discipline in the Sakhalinrybprom production association, which was conducted by the deputy general director: 40 percent of the instructions issued by the association were not carried out. The reasons? For 10 percent -- because of a lack of supervision, and in 30 percent of the cases the decisions themselves were ill-advised, without knowledge of the essence of the matter or the actual situation in the field. That is, 30 percent of the "instructive" documents were deliberately not acted on. And this means that approximately 30,000-35,000 orders, radiograms and so forth a year are issued without purpose. So much labor is expended in vain! Even if one takes the minimum time norm for "preparing" one document as 1 hour (and many of them take a whole day each), about 4,000 man-days are spent on administrative rejects. If each document takes only one page (which very rarely happens -- what kind of order can be put on one page?!), the typist needs about 200 days of hard work. And then a minimum of three people familiarize themselves with each kind of "product": the manager of the enterprise (or his deputy) to whom the document is addressed, the chief of the division or service, and the person who is actually supposed to act on it. Even if this takes 10 minutes from each of these people, the time expenditures accompanying the "reject" will amount to 2,000 man-days.

This is the basic, but far from a complete list of nonproductive losses of time and labor. To this one should add the moral harm caused by adopting ill-advised decisions, and the outlays in administration caused by the loss of authority of the manager who signed the unintelligent document, the appearance of the pernicious habit of not acting, and the loss of discipline. And with the landslide flow of incoming and outgoing documents, mistakes are inevitable. An analysis of the document turnover of one of the bases of the fleet\* showed that with an increase in production volume of 23.6 percent over 3 years, the document turnover increased by 64.3 percent, that is it outstripped the increase in productivity 2.7-fold. The document turnover of

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\*The Korsakov base of the Sakhalinrybprom ocean fishing administration.

the staff of the Kamchatrybprom association amounts to about 185,000 documents a year, not counting copies. Practically all of the incoming and outgoing documentation goes through the general director or his deputies (today's manager needs complete information). Thus each day one management worker has an average of 70-80 documents. And they require a decision -- one that is correct, well-thought-out, and objective. Is objectivity possible with this kind of volume? And this flow is becoming larger each year.

And it should be the opposite. Everyone must do his duty without reminders and prompting. That is the way it should be, but it is not the way it is.

And that is apparently not the way it will be until we begin to manage not with numbers but with ability. Twenty years ago in industry there were about 3 million employees, and now there are more than 6.5 million.\* Not everywhere, of course, were the conditions so favorable for a quantitative increase in the number of workers. In places where there are strict material limits the picture is different. I am referring to the "maritime" experience. During 20 years the staff of the large freezing fish trawler was not increased by a single engineer-technical worker, and the overall number of people working on the ship decreased during that time from 114 to 90 as a result of purely organizational measures, without mechanization and automation of labor processes. But in industry as a whole (including fishing) the curve of the proportion of employees in the overall number of workers continues to crawl upward. It is necessary to put a stop to this growth, and along with it both the flow of paper and the number of ill-advised decisions. It is necessary to break this closed circle.

People frequently suggest significantly reducing this category of workers. Here is some somewhat simplified arithmetic: 2 million engineering and technical personnel and employees, obviously, will write one-third as much as 6 million. And if one adds to this 2 million talented engineers and employees who not only write, but also think, the amount of correspondence will again be reduced by half. The formula is not new. For many years in a row now the Ministry of Finance has unsuccessfully tried to solve this problem. But one should not expect success as long as the enterprises, services, divisions and specific workers advantageously maintain "superfluous" people and as long and there is motivation for the influx of talented engineering and technical personnel and employees.

The loss of prestige of the labor of engineering and technical personnel was brought about mainly by the relative reduction of their wages as compared to those of laborers. The return of their previous social status is possible, apparently, by considerably raising the salaries of engineering and technical personnel. I anticipate a fair objection: it is not within the power of a state where each ruble is accounted for to allot millions of rubles for the prestige of a profession. Moreover, a one-sided solution to the problem (just increasing wages) will lead to an even greater increase in the proportion of engineering and technical personnel and employees in the overall number of workers.

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\*Gonzales, E., "Staff Distribution," TRUD, 26 March 1982.

But where is there a realistic solution?

To begin with, a couple of truths that are generally known to economists concerning the present staff distribution of the enterprise and the rights of the manager. The staff distribution of the enterprise is arranged along the following principles. The higher organization annually sets a limit for maximum allocations for administrative-management personnel and a limit on numbers of individuals (in practice the limits are based on actual state of affairs in the report year minus the assignment for reduction, plus the number of personnel for facilities that are being started up for the first time). The ratio between senior and rank-and-file workers should be 1:2. The salary for a particular specialist is established according to a schedule within the limits of the minimum and the maximum. Additionally, in the staff distribution it is necessary to maintain the average salary, or at least not exceed it. There are five basic officially stipulated conditions and limitations for constructing the staff distribution.

But actually there are more than five. There is not only an upper limit, but also a lower limit on the number of personnel. If you have a limit of 100 people and the distribution is drawn up for 90, the average salary has not been maintained, and this means that there will be a savings on the maximum allocations, which you are obliged to enter into the budget.

Can the manager regulate the productivity of the labor of engineering and technical personnel through their earnings? Theoretically, yes. Here is what the creators of the staff distribution think of this. A VUZ graduate has come to the staff, and the manager assigns him the minimum salary of an engineer (it is necessary to take a close look at the individual) -- 115 rubles; after a year of good work it is 125; and after another year the average salary is 132.5 rubles. And then it is time to promote a good worker to be a senior engineer. The system is the same -- from the minimum salary of 140 rubles, to the average of 152.2, and so forth.

But these are only abstract ideas which are possible in real life if the salary of each staff worker does not exceed the established average level. But by the time the young specialist arrived there were already certain deviations, for instance, they hired an excellent worker who could easily be appointed deputy division chief, but only a senior engineer position was open. Taking advantage of his rights, the manager assigns him the maximum salary. Or a specialist who is not young but is still holding down the position of an engineer (there are no other positions open) is given the upper limit of the range. Or ... In brief, there are many reasons why the salaries of certain workers exceed the average, as a result of which the raises for the young specialist amount to barely 10 rubles a year.

Do not forget about one other limitation: a specialist's salary can only be increased. If he has done something wrong or begun to work less well, it is practically impossible to pay him less. This is regarded as a transfer to a lower-paid job, which in and of itself is a troublesome and scandalous business.

Even this far from complete list of limitations shows that the manager has practically no chance to regulate the labor return from his workers through wages. True, in the decree, "On Improving Planning and Strengthening the Influence of the Economic Mechanism on Increasing the Effectiveness of Production and Improving the Quality of Work," managers are given the right to establish an increment of up to 30 percent of the salary for engineering and technical personnel with high qualifications. But this comes from the savings on the wage fund credited to those same limits of maximum allocations. What kind of savings can there be with such limitations?

There is some point in reducing the number of limitations to a minimum, leaving, say, the limit on maximum allocations and the limit on numbers and qualifications of personnel. The manager will hardly have to think long: in addition to supernumeraries, any enterprise has a critical need for thinking specialists. I am confident that he will be able to evaluate his workers objectively.

Now various methods are used to evaluate individual aspects of the activity of engineering and technical personnel and employees: coefficients of executive discipline, creative activity, periodic certification of the management staff, and anonymous questioning of management workers along the horizontal and vertical, which is popular in many foreign countries. The Ministry of the Fish Industry, for example, has suggested that enterprises of the branch each quarter evaluate the labor of managers, engineers, technicians and employees, and that these evaluations be taken into account when calculating the current bonus. With some work, these recommendations too can be used for determining the amounts of the wages. But the selection of criteria for evaluating the effectiveness of engineering (administrative) labor is a large subject for a separate discussion. It is important for the director to have the possibility of paying at least twice as much to a worker who is doing the work of three in order to realize more fully the principle: "From each according to his ability -- to each according to his labor," which has somehow been forgotten when evaluating the labor of engineering and technical personnel and employees. "And today ... every one of our citizens has the right to only those material goods which correspond to the quantity and quality of his socially useful labor. Only that. And here it is important to keep strict accounts and to observe to observe this principle strictly," it was emphasized at the July (1983) Plenum of the CPSU Central Committee.

The essence of the proposal thus amounts to distributing the material goods among engineering and technical personnel and employees according to the quantity and quality of their socially useful labor. In a comprehensive brigade which distributes additional earnings according to the coefficient of labor participation, there is no place for unmotivated workers. In exactly the same way collectives of engineering and technical personnel which distribute wages according to the coefficient of creative participation will strive to release superfluous personnel, which is very important in the modern demographic situation.

The existing salary system could be retained, but its role would be recommendatory: it would serve only as a reference for the amount of the



salary. The engineer would know his range -- 115-150 rubles. If he were given a salary of 132.5 rubles, he would be rated as an average worker, but 115 rubles would be a signal for alarm about which he should think seriously. Naturally, it is also necessary to introduce a means of limitation -- a lower level of the wages, say, of 70 rubles, so that a superior who is too severe would not leave a guilty worker without any wages.

At the beginning of the implementation of the proposed approach, certain social and ethical problems are inevitable. But still it has become customary to distribute the additional earnings in the brigades of workers according to the coefficient of labor participation, and the division or service is also a kind of brigade with its own volume of work and final result. Consequently, the proposed principle does not stand in contradiction to modern requirements.

In order to make the picture of the "self-curtailling" collective of engineering and technical personnel and employees completely ideal, the division chief should be given his own material incentive fund, even if it is a small one (this is the dream of every supervisor). After all the foreman's fund does exist, and it works very effectively. And this being the case, why not introduce for engineering and technical workers material distinctions in their successes, within the limits of the overall material incentive fund, of course.

The changeover to the proposed method of providing incentives for the work of managers (it is not a very quick task in our age of "multilevel" coordination) does not preclude other organizational measures, particularly efficient, concrete distribution of the functional duties. We might as well admit that the official instructions of certain engineering and technical personnel are too verbose and unclear. Attempts by the worker to use his official instructions to determine the necessary labor expenditures far from always lead to the desired result. According to certain instructions, it turns out that the actual working day should last no less than 30 hours, but the worker still manages to get enough "cigarette breaks." According to others, you cannot count on 2 hours, and the worker sits "from bell to bell" without a break and they still reprimand him.

How can one but recall here the "Regulations for work on ships of the fish industry fleet," although they are obsolete in places and need to be updated. But a laconic style, concreteness and the impossibility of a double interpretation of the formulations in it have been developed by centuries of life at sea. Clarity also determines other conditions for the activity of the maritime collective. I have never heard of 2-hour reports on ships, and they do not have lengthy conferences there. The dynamic situation teaches them to make quick decisions, and especially complicated conditions teach them to value their own time and that of others. Awareness of the fact that the earnings, health and sometimes even the life of your comrades depend on the way you perform your duties makes a certain impression on the individual and advances discipline to one of the leading positions among the moral values.

In my opinion, it is personnel administration and material responsibility for the performance of duties and the final result, and not the amount of work time spent, that will reveal the necessary and the "superfluous" workers. It is possible to reduce the staffs of many institutions and organizations significantly without causing any harm. The only thing necessary is to find progressive forms of organization and stimulation of labor.

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CSO: 1820/121

## WAYS OF ECONOMIZING ON METAL IN MACHINE BUILDING DISCUSSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 84 pp 94-109

[Article by L. L. Zusman, doctor of economic sciences, professor (Moscow): "Economy of Metal in Machine Building: Factors and Prospects"]

[Text] In the USSR machine building and metal processing consume about 72 percent of the metal products, including cast material. The operational metal-intensiveness of fixed capital, as determined by its durability, reliability and the expenditure of metal on capital repair, depends to a large extent on machine building. The main sources for economizing on metal are related to the utilization of technological and design factors. There are data available which make it possible to judge the possibilities of saving on metal in machine building in the next 15 years.

Let us consider in greater detail first the interbranch factors in economizing on metal and then the reserves which lie in individual branches -- in casting, forge-press, metal cutting and welding productions.

### Interbranch Factors in Economizing

Saving metal in machine building depends on the quality and assortment of the metal products that are used, and therefore we are taking into account the main changes that are forthcoming in the technology of ferrous metallurgy:

the replacement of Marten production with convertor furnaces with oxygen blasting and electric steel smelting furnaces, with an increase in the proportion of the latter;

the assimilation of the output of cast billets instead of rolled metal made from ingots through continuous casting of the steel;

controlled technology for rolling;

the introduction of nonfurnace enrichment of steel -- bucket metallurgy.

According to calculations of the Institute of Economics of the Central Scientific Research Institute of Ferrous Metallurgy imeni I. P. Bardin, the durability of metal for mass purposes can be increased by 15-18 percent as a result of these factors.

In rolling production obsolete machine tools and sets of equipment will be replaced with new ones which produce rolled metal of a higher quality. The introduction of new technology for rolled metal involves:

installing rigid casings for obtaining rolled profiles of more precise dimensions;

assimilating controlled conditions for rolling metal on wide-belt and thick-sheet mills;

thermomechanically processing high-grade rolled metal;

greatly expanding the output of thermo-processed rolled metal, two-phase highly durable designs of steel, as well as of bent and shaped profiles;

producing metal products with new metal and polymer coatings, and so forth.

Intensification of production in ferrous metallurgy will contribute to economizing on metal in machine building. For example, controlled conditions for rolling will lead to a savings of metal in machine building in the amount of 2.0-2.5 million tons a year, and the assimilation of the production of two-phase steel in a volume of 1.0-1.5 million tons for the automotive and other branches of industry will make it possible to save 0.5 million tons of rolled metal. On the whole, improvement of the quality of metal products as well as of their assortment will make it possible to save about 20 million tons of metal a year in consumption.

Table 1. Structure of the Reduction of the Proportional Expenditure of Rolled Metal in the Machine Building and Metal Processing Branches in Various Five-Year Plans, % of Total

Factors	1966- 1970	1971- 1975	1976- 1980	1981- 1985 plan
Use of rolled metal of better quality and assortment	15.2	33.2	17.4	28-30
Use of rolled metal substitutes	6.4	7.6	5.8	8-10
Improvement of technological processes	56.2	39.8	43.5	30-33
Perfection of designs and improvement of weight characteristics of machines, mechanisms	22.2	19.4	33.3	30-31

The close connection between the reduction of the proportional expenditure of rolled metal in machine building and metal processing and improvement of the quality and assortment of rolled metal products is shown in Table 1. In 1965-1980 factors depending on ferrous metallurgy accounted for from 15.2 to 33.2 percent of the overall volume of savings on rolled metal. The drop in the relative amount of this factor during 1976-1980 was brought about by the fact that during this period the planned measures for improving the quality and expanding the assortment of ferrous metallurgy products were fulfilled by less than one-third. Under the 11th Five-Year Plan it is intended to increase the proportion of rolled metal of better quality and in a broader assortment to approximately the level reached under the 9th Five-Year Plan.

Economizing on metal in machine building and metal processing as a result of the use of rolled metal substitutes holds a relatively modest position among the factors under consideration since the utilization of nonferrous metals is limited, and a planned increase in this factor depends mainly on a relative increase in the proportion of aluminum and plastics in construction materials, which makes it possible to reduce the weight of the machines and increase their resistance to corrosion.

Improvement of technological processes in machine building and metal processing and also improvement of designs and weight specifications of machines and mechanisms are of overwhelming significance in saving on metal. In the past the first factor has been more important, but under the 10th Five-Year Plan the significance of the two factors was almost equal. Moreover, improvement of technological processes accounts for a smaller share in the overall savings.

Economizing on metal in machine building and metal processing as a result of improving technological processes, designs and weight specifications of machines is also conditioned by a number of factors which depend on metallurgy, but are not taken into account in the indicators of the quality of rolled metal. This pertains, particularly, to the allowable deviations in the diameter, the thickness of the strip and elements of shaped profiles for mass purposes.

The overall amount of the tolerance for hot rolled circular and rectangular profiles with dimensions from 5 to 48 millimeters has been reduced according to the GOST for rolled metal with ordinary precision to 1.1-1.36 (depending on the size). The reduction of the proportion of tolerance was achieved mainly through a considerable reduction of the plus tolerances (1.25-1.67-fold for rolled metal of ordinary precision), while the minus tolerances remained the same or decreased insignificantly. The reduction of the plus tolerances for rolled profiles is of great economic significance: it reduces the mass of 1 meter of rolled metal and saves metal. The smaller the dimensions of the rolled profile, the greater the relative amount of the savings on metal.

A number of technical measures have been taken at metallurgical plants to obtain rolled profiles for mass purposes within the limits of the minus tolerances. Since 1975 ferrous metallurgy has been delivering to the consumers rolled products with a theoretical mass. In 1975 29.6 million tons

of metal were released according to theoretical mass, which made it possible to save 518,000 tons, and in 1980 42.7 million tons were released this way with a savings of about 800,000 tons of metal. Reducing the weight of 1 running meter of rolled profiles makes it possible in machine building to reduce the volume of metal processing and reduce the weight of the elements, machines and mechanisms.

But the reserves for reducing the fields of tolerances for dimensions of mass kinds and profiles of rolled metal products are not exhausted. On modern hot rolling mills abroad, the deviations in the thickness of the rolled sheet over 95-99 percent of the over length of the roll do not exceed  $\pm 0.1$  millimeters; the deviations in the diameter on the rolling mills have been reduced to this extent. The tolerances in thick sheet mills have also been reduced several-fold.

Improvement of technology and organization of production in machine building (including casting) also exerts an influence on the savings on metal in ferrous metallurgy. When changing over to smelting synthetic iron in electric induction furnaces using recycled metal scraps and scraps from metal cutting production, there is no longer any need to use cast blast furnace iron when smelting cast metal in cupola furnaces. Because of the fact that when cast iron is smelted in cupola furnaces the productivity of the blast furnaces decreases by 25 percent and there is a corresponding increase in the expenditure of coke, the replacement of regular cast iron with conversion pig iron contributes to increasing the production volume while economizing on coke.

A change in the ratio between the capacities of forge-press and stamping production, on the one hand, and metal cutting, on the other, in favor of the former, opens up the possibility of improving the assortment of rolled metal products and increasing the proportion of rolled sheet metal while reducing the proportion of high-grade metal, which is a progressive direction for the development of ferrous metallurgy.

In machine building and metal processing the volume of metal scraps is distributed according to the various kinds of preparation in the following proportions: casting -- 33 percent, forge-press -- 6 percent, metal cutting -- 60 percent, and welding -- 1 percent.

Scientific and technical progress makes changes in the structure of the billets that are produced both in terms of the proportion of castings, forgings and stamped billets, and in terms of the replacement of these with profile rolled steel, items made of plastic, nonferrous metals, ceramic metals, and welded elements. Changes are also taking place in the ratio of labor-intensiveness among the main technological processes. The range of products for interbranch use is expanding, including those of the preparation productions.

Let us now consider interbranch factors in economizing on metal.

## Casting Production

Casting production is the basic preparatory cycle for machine building. It is of the small series type and is dispersed among more than 5,000 enterprises, shops and work sections. The proportion of specialized casting plants is not great. They manufacture approximately 4 percent of the castings, while the expedient level of centralized production is 50-55 percent.

The raw materials in casting production are: for cupola cast iron -- cast pig iron, iron byproducts and scraps, and for cast steel, where the process basically passes through electric arc furnaces -- steel scraps and wastes. In recent years a changeover has been started from cast iron production with cupola casting to smelting in electric furnaces, thus obtaining synthetic iron from carburized scrap steel, which contributes to considerably improving the quality of the steel castings. But so far this progressive technological device is used for only 10 percent of the overall production of cast iron.

In the USSR as a whole the output of suitable castings for cast iron amounted to (in percentages of the mass of metal raw material that was used): 1970 -- 72.1 percent, 1975 -- 71.5 percent, 1980 -- 71.0 percent, and for cast steel these figures were 60.1, 60.6 and 58.1 percent, respectively. In 1975 and 1980 the output of suitable cast iron and steel decreased in a number of machine building ministries (Ministry of Chemical Machine Building, Ministry of Construction, Road and Municipal Machine Building, Ministry of the Automotive Industry, Ministry of Instrument Machine Building). To a certain degree the change in the list of kinds of cast metal that is produced, which includes a considerable number, could have had an influence on this.

The proportion of manual jobs in the small shops is significant. Only when the capacities of the latter are greater than 20,000 tons is it less than 20 percent. With machine forming there is a significant increase in the precision of the sizes, the surfaces of the castings are improved, and the allowance for mechanical processing is reduced by approximately half, which is accompanied by a reduction of the proportional expenditure of metal by 18-20 percent with the concomitant reduction of expenditures of labor, metal cutting equipment and electric energy on mechanical processing of these castings. In 1982 they allowed 5.8 million tons of scrap metal for cast iron production and 3.2 million tons for cast steel, not including the irretrievable losses which were not taken into account.

It is possible to increase the effectiveness of casting production by creating and introducing new production processes for the form, bar, scrap, cleaning and other sections. At the present time more than 70 percent of the castings are manufactured in sand and clay forms. Despite the universality of this method, the precision of the sizes and parameters of roughness of the surface of the castings do not meet modern requirements.

If one takes into account that the weight of the cast parts and the designs of the machines are 20-25 percent heavier than similar ones manufactured from rolled metal and the consumption of cast metal in machines amounts to about 70 percent of the overall output, the increase in weight of the machines can be

estimated at approximately 3.2-3.7 million tons a year. In 1980 this comprised 4.0-4.6 percent of the overall mass of machines and equipment that were manufactured, and for individual kinds of machines in which they use cast profiles instead of welded rolled profiles, the metal-intensiveness was considerably greater.

In view of this, further increase in the volume of smelting of steel and output of rolled metal products should outstrip the production of cast iron and especially cast steel. The introduction of progressive technological methods into casting will contribute to this tendency.

The existing special precision methods of casting (in investment patterns, in shell molds, in chill molds and the centrifugal method) make it possible to bring the mass of the cast piece considerably closer to the mass of the final item, and to improve their quality. As compared to castings that are manufactured in sand molds, the mass of the billet can be reduced when they are cast in shell molds and in chill molds -- to ten-thirteenths, in investment patterns to one-half, and by the continuous method -- to five-elevenths. Special methods of manufacturing castings make it possible to reduce the tolerances for mechanical processing to from one-third to one-fifth of that required for casting in single-use sand molds. Thus with casting in sand molds the tolerances are 50-80 percent, in chill molds and shell molds -- 25-40 percent, and with investment patterns -- 10-25 percent. Obtaining casts of billets by special methods makes it possible, moreover, to carry out more easily mechanization, automation and organization of mass flowline production.

When changing over from the ordinary method of casting to casting in shell molds the mass of the cast piece is reduced by 15 percent as a result of greater precision, and the tolerances for processing are reduced by 50 percent. The output of suitable castings increases by 10 percent. Expenditures on mechanical processing are reduced by 25 percent, since there is no need for complicated working of the interior surfaces. In a number of cases the mechanical processing of the castings can be completely eliminated or reduced to a minimum.

Casting in investment patterns is a progressive means of producing castings that are precise or complicated in form. Using this method makes it possible to replace an average of 2 tons of rolled metal with 1 ton of casting and to save up to 1,000 mill-hours on mechanical processing. This method is the most effective for obtaining small and complicated parts and also parts made of alloys which are difficult to process. In a number of cases it can be used expediently to replace mechanical processing from high-grade rolled metal. This way there can be a savings as a result of reducing the labor-intensiveness of mechanical processing to one-third the usual amount and reducing the expenditure of metal by 50 percent.

In recent years the USSR has begun to produce castings using lined chill molds. The lining contributes to considerably increasing the service life of the chill mold, and also to improving the surface layer of iron castings. These castings, manufactured according to the method of the institute for special methods of casting (Odessa) are distinguished by their dense



structure, precise dimensions, and tolerances for mechanical processing which are reduced by 50-55 percent, and they provide for reducing the expenditure of metal by 12-15 percent and reducing the production cost by 15 percent as compared to similar castings which are manufactured in crude sand-clay forms (see Table 2).

If the plants of metallurgical machine building were provided with a sufficient quantity of rolled sheet metal, the proportion of castings produced by progressive methods could be increased to 25 percent. With an annual output of metallurgical equipment in a volume of 360,000 tons, this would make it possible to save 20-30 percent of the metal.

Table 2. Proportion of Production of Castings Manufactured by Progressive Methods, %

Methods of casting	Cast iron			Cast steel		
	1970	1975	1980	1970	1975	1980
Using fast-hardening mixtures	5.2	8.1	11.0	24.9	26.2	28.0
In chill molds	8.8	9.3	10.2	7.4	7.1	5.5
In investment patterns	0.003	0.01	0.02	1.5	1.5	2.3
In shell molds	0.6	0.7	1.0	0.8	1.0	1.2
Total	14.5	18.1	22.2	34.6	35.8	37.0

The basis for further development of casting production is the renovation of existing casting shops and the construction of new ones with the optimal capacity, improvement of the quality and precision of castings through the introduction and increased proportion of progressive technological processes in the overall volume of output of castings, and the introduction of flowlines and automated lines. Further concentration of casting production is also very important.

It would be expedient to accelerate the introduction of progressive processes in casting production by modernizing existing cupola furnaces and installing electric furnaces to replace cupola furnaces. Additionally, the technology of smelting in cupola furnaces is improved because of automation of the operations of selecting, weighing and loading the charge, control and regulation of the process of smelting, heating the blast, and using natural gas and new materials (coal blocks) for lining water cooled cupola furnaces.

When manufacturing synthetic cast iron in electric furnaces one provides for high quality of the metal by reducing the sulfur and phosphorus content in it and intensive mixing, which makes it uniform in chemical composition and temperature. This makes it possible to obtain good quality castings in any configuration, and to reduce defects and scaling to approximately 2.5 percent instead of 6 percent in cupola furnaces.

When smelting synthetic iron in electric induction furnaces from recycled metal scraps and wastes from forge-press and metal cutting productions there is no longer a need to obtain blast furnace cast iron, whose production involves reducing the productivity of the blast furnaces by 25 percent and increasing the proportional expenditure of coke. Casting synthetic iron does not require special casting coke, or the construction of warehouses and devices for storing and transporting coke and limestone. Working conditions improve considerably (there is no dust, the discharge of gases decreases, and the quantity of slag and refractory wastes decreases to one-fifteenth - one--twentieth the amount that is formed when casting in cupola furnaces). The production cost of 1 ton of liquid iron smelted in an electric induction furnace, despite the increased expenditure of electric energy, is considerably less than when smelting in cupola furnaces.

Concentration of casting production is increasing slowly. Apparently the reason for this is the great force of inertia in the organization of casting production and the poor supply of smelted metal for the enterprises. It is possible to rectify this situation if the central casting organizations and their branches will provide sufficient quantities of cast metal to the small enterprises that need it and must acquire it from extremely small casting shops and sections in order to conduct repairs and manufacture fittings and other kinds of auxiliary devices.

#### Forge-Press Production

The technical and economic indicators of forge-press production can be improved by using more stampings with minus tolerances, which make it possible to utilize the negative field of tolerance for the billet, and also straight stamping, which makes it possible to reduce the forge overlaps, multipiece stamping and stamping on horizontal forging machines.

In the majority of machine building plants the volumes of consumption of billets are fairly high, while their series production and significant product list is not great. Under these conditions it is difficult to introduce progressive methods of technology, organization and management of production. Therefore an important reserve for economizing on metal is concentration and specialization of forge-press production, and also standardization of forge-press items.

The level of utilization of metal when producing hot stampings on an average for the USSR in 1970 amounted to 84.9 percent, 1975 -- 84.9 percent, 1980 -- 85.0 percent and 1981 -- 84.8 percent (not counting losses of metal when heating the billets), that is, it is almost stable in spite of the change in the list of kinds of forged billets. If one includes in this indicator forging from ingots, whereby the utilization of metal is about 0.5-0.6m the level of utilization of metal will amount to an average of about 0.75.

In preparation productions, including in forging and pressing, the configuration of the items should be brought as close as possible to their final condition in order to reduce the volume of subsequent processing. To this end, forge-press production is equipped with stamping presses and other

progressive new kinds of equipment. To a certain degree this causes additional wastes in the forge and press production, but in subsequent processing the wastes are significantly reduced, which produces a significant savings on production expenses.

The main technological reserve for improving the utilization of metal in forge-press production is the replacement of forged pieces made of high-grade cold stamped rolled sheet metal. The coefficient of increased expenditures on the production of 1 ton of billets as compared to the value of 1 ton of initial raw material here is 4.3 for the forged piece and 1.4 for the cold stamped piece.

With cold sheet stamping one can save metal by cutting the sheets correctly, selecting the optimal dimensions, applying waste-free and reduced-waste stamping, and utilizing the wastes that are formed during the cutting. Combined cutting is especially effective -- manufacturing parts of various sizes and configurations from one sheet.

Progressive technological processes in forge-press production include the manufacture of forged and stamped pieces on crankshaft hot stamping presses, sorting and calibrating, precision stamping, and processes of extrusion and upsetting, which provide for high precision and sometimes completely eliminate subsequent mechanical processing.

It would be expedient to develop the production of rotation forge machines for manufacturing solid and hollow multistage shafts with diameters of up to 100 millimeters, radial forging machines with program control, and also forging machines for hot three-dimensional stamping.

At the present time three-dimensional stamping is being used to produce a number of parts at automotive plants. The replacement of cast parts with cold stamped parts provides for reducing their mass by an average of 25-50 percent, reducing the expenditure of metal by 30-70 percent, reducing labor-intensiveness by 50-80 percent, and increasing the coefficient of the utilization of metal to 90 percent. At the same time the durability and sturdiness of the parts are increased. In view of this, forge and press production should be developed at more rapid rates than casting and metal cutting productions are, where the loss of metal in wastes and the relative expenditures on processing metal are significantly higher than with processing by pressure, and the quality of the items is poorer.

Of great significance for raising the technical and organizational level of preparation production is its concentration, whereby the utilization of more productive equipment and progressive technological processes is more economically effective. Concentration of these productions is closely related to centralized supply of industrial enterprises with technological fittings and instruments, and also the performance of capital repair on machines and equipment that are installed in all branches of industry by the corresponding machine building branches and the specialized repair branch.

## Metal Cutting Production

With the average level of calculated metal wastes in machine building and metal processing in the amount of 200 kilograms per ton in 1981, this indicator at enterprises of the machine building branches amounted to an average of 273 kilograms per ton, in machine building and metal processing of the Ministry of Ferrous Metallurgy -- 83 kilograms per ton, and in other branches -- 125 kilograms per ton. These significant differences were brought about by the nature of the metal items manufactured by the machine building branches and the other branches for their own needs.

The level of utilization of metal (in terms of the quantity of scrap metal resources that are gathered) increased in 1981 to 79.5 percent instead of 78.4 percent in 1971. The lowest level is found in the Ministry of the Automotive Industry (77.0 percent) and the Ministry of the Electrical Equipment Industry and the Ministry of the Machine Tool and Tool Building Industry (75.6 percent). Some of the scrap metal in the form of shavings, small cut pieces, and wastes from grinding and polishing are not gathered. These are estimated to comprise 10-15 percent of the overall quantity.

The changeover of 1 million tons of rolled ferrous metals with processing by cutting to reduced-waste processing by the method of plastic deformation of the metal will save 170,000-250,000 tons of rolled metal, and will release more than 10,000-15,000 metal cutting machine tools and more than 13,000-20,000 workers. Increasing the coefficient of the utilization of metal which, with respect to rolled ferrous metals, amounts to about 0.71-0.72 in specialized branches of machine building and metal processing, by only 1 point will make it possible to produce more than a half million rubles' worth of additional machine building products.

In the structure of the stock of machine tools there is a clear tendency toward increasing the proportion of the group of specialized, special and combined machine tools which provide for a high level of labor productivity, and also roughing and polishing machine tools for electrophysical and electrochemical methods, which make it possible to achieve a high class of precision of processing of the parts and, because of this, a reduction of the losses of metal from abrasion as well as a longer service life. Nonetheless, although the proportion of lathes is decreasing, it still remains significant (20.4 percent), which shows that we are still using rolled profiles, forge and press parts, and parts with significant tolerances for processing.

The first group of branches shown in Table 3 is distinguished by its large proportion of unique machine tool and combined metal cutting equipment, a high proportion of cast iron and steel in the overall consumption of metal; and a low level of its utilization. The second group typically has mass production, a large proportion of automated machines in the stock of metal cutting equipment, a high level of specialization of production, and a higher coefficient of shift work for the utilization of metal cutting machines.

Table 3. Current Production Outlays and Proportional Capital Expenditures on Processing Metal by Cutting in Machine Building Branches, Rubles per Ton

Branches of machine building	Proportional capital expenditures	Current production outlays
Group I		
Heavy, energy and transport	1,039	467
Electrical equipment	1,030	469
Machine tool building and instrument industry	1,035	356
Machine building for light and the food industry	1,000	563
Group II		
Automotive construction	644	142
Tractor and agricultural	566	188
Chemical and petroleum	455	192
Construction-road and municipal	480	173

The sum of related expenditures (with the normative coefficient of  $E=0,12$ ) per 1 tons of shavings obtained from processing metal by cutting in the first group of branches is 683-480, and in the second group -- 250-219 rubles per ton. During 1981 there were about 10 million tons of shavings (including those not gathered); production outlays here amounted to about 3-3.5 billion rubles.

At many machine building plants, because of the widespread distribution of ball, roller, axle, bushing, tooth and other rolling mills, they have begun to utilize the process of metal rolling. The main merits of these mills is their high productivity and automation which are achieved because of the continuity of the process, increased precision of the items and, as a result, more economical utilization of metal. High effectiveness is achieved with part rolling mills which provide for increased labor productivity and good quality of the items with a significant savings on metal.

The durability of the parts and components of machines depends on the degree of their processing. Here it is important to change the structure of the stock of machine tools: to increase the proportion of polishing and finishing mills as compared to the group of turning, planing, slotting and broaching machines.

The proportion of billets manufactured by precision methods is still inadequate. This leads to a situation where the operations involved in

removing surplus tolerances reach 50 percent (and sometimes 80-90 percent) of the overall labor-intensiveness of the mechanical processing, while the proportion of finishing is only 4-12 percent.

An important source of economizing on metal in machine building is the introduction of reduced-waste technology. Previously at the Dneprovsk Metallurgical Plant imeni D. E. Dzerzhinskiy, axles for railroad cars were manufactured in the forge-press shop. With the startup of a special axle rolling mill, the production of axles by the rolling method was assimilated. As a result, the expenditure of metal decreased by 20 percent, since hollow axles are 80 kilograms lighter than solid ones. The annual savings amounted to 9 million rubles. At ZIL they have assimilated reduced-waste technology in a special preparation facility, for which the Voronezh plant for heavy mechanisms is sending highly productive new equipment which provides for the output of precision stampings.

Certain plants are introducing a principally new, progressive reduced-waste technology for rolling billets for machine parts which was developed by the VNIIMetmash Institute. For the first time in the world this method is being used to roll toothed wheels, hollow shafts, axles, boring bars and other parts. As a result, the precision and durability of the parts have increased, and labor productivity has increased significantly.

But on the whole machine builders are slow in introducing reduced-waste technology, and they are not doing it comprehensively. Only one-fifth of the parts in this branch are manufactured by the method of precision three-dimensional stamping. And the method of forging is used much more extensively. This leads to losses of up to one-third of the metal as wastes. And the overall expenditures are great: 1 ton of parts from forgings costs 1,833 rubles; from high-grade rolled metal and mechanical processing on metal cutting mills -- 1,386 rubles; and with three-dimensional stamping -- only 378 rubles.

#### Welding Production

In machine building and metal processing, welded elements and parts accounted for 48.3 percent of all the billets in 1975 and 50 percent in 1980. Still the national economy needs a number of steel profiles which can be obtained only by welding. They include flanged, thin-walled, asymmetrical elements with levels of variable cross sections of nonstandard dimensions.

An investigation of the relative economic effectiveness of changing cast items over to welding with rolled sheet metal, which was conducted from data of the Elektrostal' plant, showed that the mass of sheet metal expended along with castings decreased from 51 to 0.6 percent among the various groups of items, and the mass of the prepared items that were welded decreased among the various groups of items from 37 to 0.9 percent, depending on their unit weight and complexity. This means almost complete elimination of wastes when processing billets. The most economical are welded-stamped billets made of sheet metal, which require 30-50 percent less metal than similar billets obtained by other methods.

Welded-stamped, welded-forged or welded-cast parts are distinguished by high durability. The use of welded elements improves the utilization of fixed capital, reduces labor expenditures and reduces the duration of the production cycle of the manufacturing plants. There is no longer any need for unique presses or mills which are used for obtaining and processing complicated one-piece parts.

The advantage of welded profiles is the possibility of obtaining not only profiles of large dimensions, but also asymmetrical and bimetallic profiles (flanges and walls of I-beams made of different kinds of steel), which cannot be obtained on a rolling mill.

The majority of welded elements are produced at branch enterprises, and the production of the same kinds of elements is scattered in small batches among many small productions. Considerably better indicators are achieved by specialized interbranch plants. The cost of production of 1 ton of welded elements here is less than half as much, and labor productivity is twice as great as in branch productions. Large specialized enterprises with annual capacities of 100,000-200,000 tons are being created, and in the future the concentration of welding production will increase even more.

The implementation of the technical, economic and organizational measures that were mentioned will provide for a radical improvement of the quality of the billets and the final output of machine building with a considerable savings on metal. The output of machine building products will increase basically without obtaining an additional volume of metal products and with the release of some of the labor resources. This will take place as a result of:

the elimination of small shops and divisions in non-machine-building branches;

the introduction into casting production of electric smelting and progressive technological devices;

the establishment of an optimal ratio between forge-press and metal cutting production;

an increased proportion of welded metal elements and the provision of machine building with highly productive automated machines and special kinds of machines that utilize metal economically;

more extensive utilization of nonferrous metals, plastics and other effective substitutes for ferrous metals.

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CSO: 1820/121

## USE OF ECONOMIC-MATHEMATICAL MODELS EXPLAINED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 84 pp 110-119

[Article by L. G. Golub, candidate of technical sciences, Scientific Research Institute of Construction of the Estonian SSR Gosstroy (Tallinn): "The Manager and the Economic-Mathematical Model"]

[Text] At the end of the year an unpleasant surprise awaited workers of the information computer center. One after another, managers of the construction trusts were refusing to renew the contracts for a new cycle of calculations of annual calendar plans using electronic computers. The most striking thing was that 2 or 3 years ago these same people enthusiastically supported the workers of the information computer center and were ready to spend with them as many hours as were necessary from their busy working time, and frequently their nonworking time as well. Today they were disenchanted and irritated. The computer did not justify their hopes.

In many organizations automated calculations have been duplicated by hand. A new manual variant of the plan was drawn up which, in the words of the production workers, lay at the basis of their work. Workers of the information computer center tried to find out if machine calculations were used as a basis for drawing up the manual plans, if only as a point of reference. Almost everyone answered in the negative. The more delicate politely said nothing. It would be difficult to imagine a worse blow at a time when it seemed that everything was going well.

And the rejection was not simply of the next economic-mathematical model, which was experimental in nature and, in the final analysis, could have contained serious faults. They had introduced a model whose development and improvement had continued for almost a decade and a half, which had received the status of a standard solution and was widely disseminated throughout the country. Various aspects of this model were analyzed from the economic, mathematical, organizational, psychological and other standpoints in dozens of scientific works. It has been passed through the sieve of hundreds of experimental calculations.



There arose the question of the principal approach to modelling a whole class of real planning problems. Here was something to think about.

What is the essence of these problems? The trust is simultaneously constructing several hundreds of objects that are not very similar to one another. About half of all the work on them is done by the trust itself and subcontractors are hired for the rest. Each year the trust has 20-30 economically independent subcontracting organizations. With its own forces the trust does several dozens of kinds of work, in which workers of as many specialties are employed. Construction deadlines are set for each project, and each construction site has its own working conditions. Here it is necessary to take into account the specific features of the project, planning decisions, peculiarities of the construction site, time periods for allotting equipment, unique materials, designs, and so forth.

The collection of projects in the trust changes annually. Therefore each year it is necessary to start over in coordinating the schedules for the construction of all projects into a unified plan which is balanced with capacities and technologically substantiated, which takes into account the various specific conditions and which at the same time provides for fulfillment of state assignments and efficient utilization of all resources. With this kind of planning one cannot speak about the optimum -- it would be necessary to use too many criteria for evaluating the quality of the plan.

Our model was created in order to solve this problem. Its basic principles are simple and comprehensible to all construction workers. Each object is described by a network model which is augmented by a number of non-network characteristics which make it possible to take into account the specifics of construction. They can, for example, prohibit one kind of work or another during the winter or prescribe parallel performance of several jobs. The library of network models describes the entire portfolio of the trust's plan and, moreover, a mass of data are created concerning the availability of resources and the planned assignments.

The model contains everything essential for the manager of the construction project -- the plan includes work, taking into account the importance of the object, reserves of time, the availability of resources for carrying it out, and so forth. The ramified logic of the model makes it possible to take into account a large number of various parameters simultaneously in planning. The plan formed on the computer is with the detailization, sections and diversity of documents which can satisfy the demands of the most meticulous manager.

Thus it appears that the users can have no complaints about the model itself. And indeed the reasons given for rejecting the calculations from the model were not principal ones. Some thought that upon analysis essential defects would be found in individual components of the plan, for example in the schedules for erecting objects. First there would be incomprehensible interruptions in the work and then work would be planned for the beginning of construction which is usually done later, or the subcontracting organizations would be included in the plan too early or too late.

To others it seemed that the plan drawn up on the computer did not account for specific conditions of production at the facilities, particularly the time periods for the delivery of resources, the agreement with the client or subcontractor and so forth. Although the possibility of accounting for these factors is envisioned in the model, they are not always remembered on time, and too much writing is needed in order to feed data into the computer.

Still others noted the duration of the cycle of calculations. In their opinion, too much time passed between the moment of the formation of new requirements for the plan and the accounting for these requirements.

The majority of the production workers soberly evaluated the human capabilities as well. It is impossible to draw up by hand a plan that is sufficiently substantiated, that is, balanced in all of the main parameters with the amount of detail required for practical work. Such a plan would contain too many shortcomings and it fails to take a great deal into account. Therefore automation of calendar planning is an important way to increase its effectiveness.

But why do the managers still reject the machine variant of the plan? Why does the plan that is drawn up by traditional methods, without utilizing electronic computers, with all its obvious shortcomings, still more useful in the opinion of the executives?

We again analyzed attentively the model with which the plan was calculated. Again we discussed its questionable elements. And again we were convinced that it does not contain significant omissions. And then suggestions like the following arose:

the machine plan, although it does not contain serious mistakes, does not correspond to the managers' idea about such a plan, and it stands in contradiction to the standard variant which has already been created intuitively by the person;

the plan does not suit the users because it is in general unnecessary. Something different is needed, and therefore even the best variant of the plan will be criticized and rejected. There are prerequisites for this: multiple criteria and lack of strictness of technology.

Let us consider these suggestions in greater detail. Let us imagine the real situation. The plan has been developed and approved several months or weeks before the beginning of the planned year. Why is this plan needed? In the first place, in order to draw up orders for resources and schedules for the work of subcontractors and to develop other similar documents, and, second, for the management of the trust and construction sites.

To manage means to act under constantly changing conditions, to develop and adopt decisions taking into account an evaluation both of the situation as a whole and of the details. For example, the manager of a trust makes a decision to move the excavators -- he has to evaluate how this will affect the trust as a whole and the course of the construction of individual objects. At

the same time he must weigh not only factors that are directly related to the work of the excavators, but also the loading of transportation, the work of the brigades, and the delivery of materials. In order to correlate the details to the whole, the manager must have formed an idea of the plan of the entire trust, and there must be a model of this plan. As essential changes accumulate, he adjusts his model and keeps it constantly in a state of "military readiness." It serves as a basis for adopting decisions and makes it possible to constantly evaluate the situation and respond to demands from the higher management.

One might assert that the manager who has not been able to formulate a sufficiently reliable and detailed mental model of the activity of the organization will be incapable of performing his functions effectively. But this being the case, can the individual formulate his mental model on the basis of a plan that has been developed by an electronic computer? In principle an affirmative answer should be given to this question, but the practice is still far from the ideal. Here, in our opinion, lies one of the most important reasons for the failure of automated planning.

An analysis of the application of economic-mathematical models makes it possible to reveal a circumstance which confirms this idea. Although now the majority of specialists agree with the opinion that the solution to complicated multiple criterion problems must be achieved in the system of "man - computer," scientific research, as a rule, encompasses two groups of problems: the construction of economic-mathematical or imitation models, which reflect most adequately the essence of the modelled process, and the creation of technical means which make it possible for man to communicate with the computer simply and conveniently enough during the process of forming the plan. When both problems are being solved it is implied that all efforts are being directed only toward drawing up an effective plan. Correspondingly, the model is created in such a way as to include man in the drawing up of the plan at times when a situation of conflict arises in the process of calculations, when it is necessary to select one of several possible paths, when it is necessary to clarify certain conditions of planning, and so forth. It is usually assumed that the manager who is participating in the process of planning has sufficient information, experience and authority to make these decisions. But problems of his activity under these circumstances have not been studied sufficiently. On the basis of what data and how does a person formulate, as it were, "in himself" the information that is sufficient for planning? For many the answer to this question is quite obvious: information is created on the basis of past experience, knowledge of production, working conditions and so forth.

But the practice of management shows that an individual forms his mental model of the plan not only on the basis of past experience. A large role is played here by the process of planning itself. The manager must pass "through himself" the entire volume of information that is being used, evaluate it from various standpoints, organize it, rank it and process it, taking into account his own individual peculiarities. He himself compiles and rejects variants of the plans, mulls them over, and extracts from his subconscious spare and alternative solutions which will help at the necessary moment to find an

efficient escape from the situation that has arisen. As it was expressed by one of the creators of the model, a manager who makes decisions in an operational production situation can be compared to a chess master. A good master prepares for a future game ahead of time, even before the game imagining its contours, and having begun the game, he tries to change its course in the direction of the variants he has prepared or prefers. The selection of a mental model of the plan, to a certain degree, plays the same role of preliminary preparation for the manager.

The official version of this model is the calendar plan, which is the basis for drawing up orders for resources, the work schedules of the participating organizations and other similar documents. If the machine variant of the plan and its mental model coincide, then everything proceeds normally. There are no special problems related to practical utilization of the results of the activity of the computer. But when such coincidence is not achieved, a conflict between the manager and the computer is inevitable -- and man will always strive to realize his own variant of the plan. When carrying out the procedure of planning the manager not only or, rather, not so much forms a plan as he creates his own mental model.

Thus in planning not only the final goal is important, but also an effective plan. No less significant is the process of planning itself. But by automating the process of drawing up the plan we thus deprive man of the most important source of information. An aspect of planning which is important for the manager remains unrealized. With this approach the computer does not expand the creative possibilities, but, on the contrary, it narrows them.

Let us sum up the results. It turns out that those who develop methods of solving administrative problems do not have the goal of rendering assistance to man in creating his own model, and, moreover, he has not even been aware of the existence of such a need. And economic managers who have been quite sincerely interested in automation of planning and at first contributed all of their efforts to the introduction of these methods, have now fallen into a trap. Having received the plan, they have intuitively felt dissatisfaction -- it has not given them information for creating their own mental model.

It is not out of place to recall that in this article we are discussing not planning in general, but planning in its last stages -- current and operational, and directly in production organizations. When forming larger plans, for example the five-year plan for the branch, the individual responsible for drawing up this plan does not have to develop operational decisions for its fulfillment for a short time interval. In any case the mechanism for his subsequent activity and the corresponding requirements for the mental model are essentially different and require independent consideration.

It is also necessary to dot other i's. This pertains above all to generalizations. It is clear that the considerations presented above do not apply to all models. There are fortunate instances in which the model completely satisfies the manager. But such instances are apparently rare, and take place in relatively simple situations. The multiple criteria for

evaluating the plan, its large number of variants, the fact that it is subject to the influence of many factors -- one can say that these indicators are typical of the plans for the majority of economic objects. So we have a right to expect maximum results from searches for ways of including the manager in the development of the plan. This line of development of economic-mathematical modelling is not becoming the major one.

Attention is drawn to the position of the economic managers. The enthusiasm of the initial period, which was brought about to a significant degree by the distorted, "push-button" idea of the role of the computer in management, had as its logical consequence the dependent attitude on the part of a considerable number of managers. This increased the disenchantment that pushed them to break with economic-mathematical modelling. In order to live through this disenchantment and return to joint friendly labor, patient explanatory work is now needed. Correct attitudes between "manager - model" make ideas about the model of the plan broader and more flexible, and they make it possible to avoid the dictates of a narrow or even a single variant of the plan, which limits management possibilities.

The task on the agenda can be specifically formulated thus: to find ways of directly enlisting the manager in the process of planning, and not only to issue the plan formulated on the computer in forms that are convenient to us, but also to develop tabulated forms so that man can use them to create his own mental models.

The generally recognized means of including the manager in the process of planning with the help of a computer is the interactive method of planning. The dialogue between man and computer serves as a basis for many effective planning decisions. But, as a rule, all the concrete developments realized by the interactive method are also directed toward only one goal -- the formation of the plan. When creating these methods it is necessary to pursue a second goal as well -- to inform the manager as much as possible. Perhaps conditions should be created so that he can carry out planning in parallel with the machine. Then it would not be so important that the plans did not coincide in some way. The main thing is that the machine variant of the plan does not contradict that which has been created by man himself.

No less complicated is the task of improving the issuance of initial information, since planning documents are more or less regulated. It is quite a different matter when one is speaking about a document which is needed for the "private consumption" of the manager. The document should be easy to understand, the manager should remember it well, it should give rise to associations, and it should maximally mobilize past experience. This requires a kind of adaptation of the document to the individual peculiarities of the specific person. Two opposites should merge into one in these documents: the integrity (aggregation) of the presentation of the information and concreteness (details). The description of a complex situation should be given simply and succinctly, similar to the way a talented artist makes the line of the drawing itself contain not only the overall contour of the depicted object, animal or person, but also and at the same time their most important individual features.

To do this it is necessary to reveal and analyze the basic psychological characteristics of the managers and, in keeping with them, formulate the requirements for the information that is to be presented. For example, for those who have developed visual thinking, it is necessary to have a maximum amount of information in the form of graphs, while for others numerical data are important. Some have a better developed ability to perceive a situation as a whole, while concrete thinking prevails in others. The former will strive to obtain aggregate information while the latter will demand details.

Practice shows that it is much more difficult to retrain a person, changing his customary work methods which are conditioned by the psychological peculiarities of his personality, than it is to make the model fit these methods. Hence the conclusion: if you want the economic-mathematical model you have created to be used for solving management problems at the lower levels of the hierarchy and in the current and operational stage, create conditions whereby the manager can work with this model.

The practical realization of this conclusion, of course, is far from simple. It will be necessary to solve many problems, both technical and theoretical. But it is worth doing. The manager will receive not only a plan, but also the information he needs for his efficient work.

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CSO: 1820/121

## PROBLEMS INVOLVED IN REPAYING CREDIT DISCLOSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 84 pp 120-126

[Article by G. S. Aloyan, candidate of economic sciences, deputy director of the Yerevan Scientific Research and Planning Institute of Automated Systems for Urban Control: "Payments, Lines, Loans Without Receipts"]

[Text] One of the basic indicators of the quality of services rendered to the population is the time spent on obtaining them. For procedures which are carried out in state labor savings banks, this indicator may be regarded as the only one. At the present time the losses of free time in savings banks which are related to payment for municipal services and apartment rent reach up to 400 million man-hours a year in the country as a whole (EKO, 1982, No 4).

The newspaper IZVESTIYA (11 December 1981) wrote, for example, Novosibirsk has 25 too few savings banks. Instead of an area of 24,000 square meters, they occupy an area of only 10,000 square meters, and labor turnover has reached 50 percent. Because of this lines of as many as 40 people are sometimes formed, and each loses up to 2 hours of his leisure time. Nothing like this can be seen in other cities, including in those where services are paid for with a single book and accounts are kept on a computer.

Savings banks carry out 95 kinds of operations related to the receipt and issuance of money. They can basically be divided into two categories: payments from private individuals using various receipts and booklets, and the receipt and issuance of money under bonds, letters of credit and savings deposits.

The former category encompasses about 60 percent of the procedures that are carried out each day in savings banks. More than 80 percent of these are for housing and utilities (and subsequently -- other payments). One should look for the solution to the problem of reducing the amount of time the customer spends in the savings bank each day in reducing the amount of time it takes to serve one customer. Increasing the number of savings banks or the number of windows in them is considered to be an inefficient solution to the problem.

When a payment is received the cashier goes through the following sequence of mandatory operations: checking to make sure that the slip is filled out correctly (the presence of the necessary essential elements) the sum total, the signature on the receipt, placing the receipt in the cash register, entering the sum on the keyboard, separating the receipt from the bill, returning the deposit and bill to the client and posting the receipt. There is another possible operation which is not mandatory, but still takes a lot of time. This is calculating the penalty and the overall sum.

This kind of technology results in hard work for the cashiers, labor turnover, and therefore also poor qualifications and, finally, a shortage of windows that are open and also a shortage of the savings banks themselves. Therefore any automated system for keeping accounts with the clients should eliminate several of the aforementioned operations or at least reduce the amount of time spent on them. Thus the free time of the citizens that is saved is the basis for calculating the economic effect from the introduction of the system.

But automated systems for keeping accounts with apartment dwellers which are functioning in various cities and differ from one another in terms of their arrangement of their tasks, and technical and mathematical support have solved only the part of the problem which is related to reducing the number of workers in rayon housing administrations, savings banks and suppliers of services, who are engaged in accounting, calculating, and controlling the payments. But since the procedures for making the payments have remained unchanged, the introduction of these systems has not had any effect on the lines in the savings banks. At the same time the specific procedures related to the preparation of information for input into the computers has required considerable expenditures of labor.

The plan of the system which is currently being introduced in Moscow is intended for automation both of deposits and of some of the payments as well. It is being realized by technical re-equipment of savings banks with terminals and minicomputers, the utilization of information transmission networks and rayon and city computer centers, but still there is no change in the organizational-technical and financial principles of the interrelations among objects of the system.

Such an approach, with a reliance on automation of an insignificant number of procedures which improves the service for the depositors (the possibility of obtaining money from any office in the city, automation of accounts and so forth), when it is introduced on the scale of the country, will require large capital investments related to the utilization of materials which are in short supply and costly supplies and equipment, but again it will not solve the main problem -- the problem of the lines of people.

Unfortunately the idea of making payments by making deductions from savings accounts has not found wide recognition. But the variant which entails withholding the corresponding sums from wages at the enterprises, where there is no automated system for keeping track of them, leads to an equivalent increase of the volume of work of the bookkeeping offices of these enterprises.

In our opinion, the failure of these attempts consists in the incorrect determination of the goals of the creation of automated systems, in the fact



that only one of the aspects of the problem is being resolved separately, and also that they are being adapted to the existing organizational-legal and financial provisions and the technical base of the savings banks.

Therefore the most effective and realistic kind of system is one which will make it possible to eliminate the lines in the savings banks by means of comprehensive consideration and resolution of issues which lie at the basis of the problem.

Under the current five-year plan, on an assignment from the USSR State Committee for Science and Technology, the Yerevan Scientific Research Institute and Planning Institute for City ASU's of the ispolkom of the Yerevan city soviet is developing a standard automated system for processing data from non-receipt advance accounts with the population (ASOD BAR). The work will be completed in 1985 with its experimental operation, whose results will be used to make the appropriate decisions.

The technical innovation of the system, not counting the utilization of electronic computers, will be the elimination of receipt books and the introduction of special cash register equipment which reads a token, with a number code which is also on the token which identifies the apartment dweller and also the person who issues the check and prepares the machine bearer of the information.

The financial essence of the system consists in that:

personal accounts will be opened up for all apartment dwellers under the same code that is on the token, this account being kept automatically with the help of a computer;

the apartment dwellers can make their payments in arbitrary amounts (it is desirable not to include kopecks or deposit) at arbitrary intervals;

all the money for the payments will go into the running account of the rayon housing administration or other organization which has jurisdiction over the building;

the rayon administration settles accounts with all the suppliers of services, including Energosbyt and the city telephone network under contractual commitments which do not depend on the concrete revenues.

The organizational peculiarity consists in that the rayon housing administrations will be given the right and responsibility to represent the apartment dwellers when dealing with all suppliers of services, including Energosbyt and the city telephone network, and the right to apply various sanctions against apartment dwellers who are in debt.

The ZhEK will submit to the computer center the information necessary for the functioning of the ASOD BAR concerning the apartment dweller and the amount of his monthly payments. This is by nature permanent information (the annual changes do not exceed 5-7 percent).

When making his payment the apartment dweller inserts his token into the cash machine, turns the money over to the cashier (the amount is arbitrary and does not necessarily have to be equal to or more than the sum of the monthly payments) and removes the token and the cash receipt, on which are indicated the number of the savings bank, the code of the apartment dweller, the date and the amount deposited. The cashier then receives the money, punches in the appropriate amount on the keyboard and, if necessary, returns the deposit. The cash register "writes" the essential elements indicated on the check into the machine.

Each day the information bearers from all of the savings banks go to the computer center where the computers enter the information about the payments in the appropriate personal accounts and calculates the sum transferred into the account of each rayon housing administration. The corresponding Gosbank institution will issue the necessary printouts for this.

A sum equal to the monthly payments for dwelling space and all kinds of services, including telephone and electricity, is deducted each month from the personal account of the apartment dweller.

The balance (advance) of the personal account is monitored by the automated system. It can be some negative amount for a particular time interval, but not not less than the amount allowed by the corresponding norms and laws. When there is a negative balance penalties are imposed.

The controller, preferably a ZhEK worker, periodically, but not more frequently than once a quarter, takes the information from the accountant and submits it to the computer center so that the private accounts can be brought up to date. Each quarter through the ZhEK the apartment dweller receives a statement of his personal account which indicates the balance at the beginning of the quarter, the dates, the sums of payments and monthly deductions, information about adjustments and penalties from the past quarter and the balance at the end of the quarter.

If the figures on the statement correspond to the checks and the withdrawals, adjustment and amount of the penalties cause no objection, the statements for the preceding quarter and the checks for cash for the preceding quarter can be destroyed, and only the last statement need be retained.

The apartment dweller will be put in contact with the ASOD BAR through the ZhEK (changes in the amounts of the monthly payments, the issuance of statements, clarification of mistakes of cash registers and the computer center, the drawing up of documents for services that were not rendered, explanation of the causes of indebtedness, and so forth).

The system sends a reminder to the apartment dweller whose debt exceeds the normative amount, and then, as his indebtedness increases, the ZhEK's and housing administrations are given the information (registers of debtors, orders to cut off telephone service, court summonses, and orders which

acquire the force of law after analysis and approval). The system also provides for the issuance of various regulatory references.

Since the ASOD BAR should be a standard system, this is taken into account when designing software and other informational support. Technically, the ASOD BAR programs can be run on any model of computer of the Ryad-2 series. Since these problems are not of immediate importance they can be resolved on the second or third shift of any computer center which has time sharing. The aforementioned organizational-technical and financial transformations, in addition to achieving the major goal -- eliminating lines in savings banks -- will enable for the suppliers of services to overcome the random nature of the receipt of payments and improve their planning and financial activity since accounts with the rayon housing administrations for the performance of work will be kept according to contractual commitments which do not depend on the receipt of payments. The administration, in turn, will have the opportunity to utilize the positive balances of the apartment dwellers and the fines for their basic activity and to give a detailed justification for the subsidies they are requesting. There will also be a mechanism for exerting an influence on debtors: penalties for indebtedness, the right to impose sanctions (cutting off telephone service, taking people to court) and the possibility of influence through housing committees.

The apartment dweller will be ahead because of losing less free time paying for services (according to preliminary calculations, the ASOD BAR will make it possible to reduce the time required for receiving one payment to a couple of seconds). All questions about the delivery and payment for services will be resolved by one authority -- the housing operations office.

Introducing the system will make it possible to eliminate lines in savings banks without having more of them, to abolish all kinds of booklets and receipts, replacing the filling out of these each month with the procedure of quarterly control using machine-printed statements and checks, and to simplify and automate calculation and bookkeeping work in all participating organizations offering services and receiving and distributing payments.

The expected annual economic effect for a city of a million is 564,000 rubles.

The decision to conduct the organizational and financial measures that have been described is within the competence of central, republic and local administrative agencies and can be adopted after experimental operation of the system. But the system cannot be utilized in even one rayon of the city without an experimental group of at least 20-30 cash registers.

Such devices are nothing new for domestic industry. Various information registration devices, automated checkout stands, and devices for keeping track of purchases on the territory of the VEF plant in Riga and so forth are functioning in the country. The CEMA countries also produce similar equipment, for example, cash registers for large stores which read the labels on the goods and formulate information for the computer.

The principles on which the ASOD BAR are based make it possible to automate receipt and accounting not only for utilities payments, but also for all kinds of other payments. But realizing these possibilities will require conducting additional organizational and financial measures, whose composition and scale can be determined only from the results of the operation of the first section of the ASOD BAR which has been described.

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## LACK OF COORDINATION OF ENTERPRISES CRITICIZED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 84 pp 127-130

[Article by Yu. I. Galushko, candidate of economic sciences, branch director of the Scientific Research Institute of Labor (Krasnoyarsk): "Inspired by the 'Departmental' Spirit "]

[Text] More than a quarter of a century ago in Krasnoyarsk, on a convenient, relatively small area on the bank of the Yenisey, a unique timber and chemical complex began to take form. It included a pulp and paper combine, plants for hydrolysis, synthetic rubber, tires, industrial rubber items and chemical fibers, as well as a silk combine. A quarter of a century is quite enough time for the group of enterprises that was created to become a real complex which effectively utilizes raw materials, semimanufactured products and wastes.

Today the majority of the enterprises that were named are engaged mainly in the output of unrelated products. The projected close interbranch production ties among them remain minimal. The technological "thread" which was to have joined all the enterprises together turned out to be too thin and broke long ago. But why did this happen? Let us recall that the Krasnoyarsk pulp and paper combine (TsBK) was constructed with the intention of having it specialize in the output of viscous and cord cellulose. From this the chemical fiber plant was to have manufactured viscous, silk and cord threads which are necessary for the Krasnoyarsk silk combine, which produces silk fabrics, and for its own industry which provides corduroy fabric. The latter is used in tire production and also for manufacturing various industrial rubber items. According to the plan, a rare economic situation was to occur, in which the suppliers could literally walk to see each other if any misunderstanding arose.

In the very beginning the TsBK produced viscous cellulose which was of poor quality, and the chemical fiber plant refused to work with it. Instead of improving its quality, the Krasnoyarsk TsBK stopped producing it, and with the blessings of its home department it changed its specialization and started producing paper and cardboard. This was the first blow to the complex. The chemical fiber plant began to receive raw material from other regions of the country. It was shipped in to Krasnoyarsk over hundreds and even thousands of kilometers, using up railroad cars which were in short supply. Because of this the raw material does not arrive regularly, and the production is still carried out at a loss.

The capacities of the Krasnoyarsk synthetic rubber plant are growing intensively. But not a single ton of this rubber will go to the Krasnoyarsk tire plant or the plant for industrial rubber items, which receive rubber from other regions of the country.

In spite of common sense, the USSR Ministry of the Petrochemical Industry, which has jurisdiction over the synthetic rubber plant, has changed its specialization to producing the kinds of rubber which are used in the European part of the country. Trains loaded with different kinds of rubber regularly meet one another going in opposite directions on the Transsiberian Railroad. From the standpoint of the ministry workers this kind of rubber merry-go-round is good, but the state sustains losses, the more so since this is not all there is to this story about rubber.

For a long time under the conditions of Krasnoyarsk Kray, which is rich in timber resources, the initial raw material for obtaining synthetic rubber was ethyl alcohol which was produced at the kray's hydrolysis plant from timber wastes. One of these plants is located not far from the synthetic rubber plant and supplies it with practically all of its initial raw material. But with time the cooperation between the supplier and consumer was broken off: hydrolyzed alcohol has a competitor -- alcohol produced from petroleum processing wastes. As a result, it seemed to this same Ministry of the Petrochemical Industry that it was more advantageous to ship in its own alcohol. And tank cars filled with similar products began to encounter one another going in opposite directions: for the hydrolysis plants of the Ministry of the Timber, Wood Processing, and Pulp and Paper Industry also needed to have its products sold....

Of course the two ministries lost nothing by transporting the main rail transportation into industrial transportation. But the shipments in opposite directions of rubber and alcohol alone, according to the most modest calculations, amount to more than 200 million ton-kilometers a year. The money that has been spent would be more than enough to return the chemical complex to its former conditions of cooperation.

How does one restore the timber and chemical complex?

In the first place they should stop shipping to the synthetic rubber plant divinyl which is produced thousands of kilometers away from Krasnoyarsk (about a thousand tank cars are needed for shipping it each year) and change over to the previous raw material -- hydrolyzed alcohol, from which at this same plant using a special method it is possible to produce divinyl, and then rubber of the kinds which will go to the Krasnoyarsk tire plant. In the regions which use the rubber which is currently produced by Krasnoyarsk, they should renovate one of the local plants, organize the production of the necessary kinds of rubber and supply it to the nearby enterprises that specialize in industrial rubber items.

In the second place it is quite possible to change the specialization of the Krasnoyarsk TsBK over to the production of viscous cellulose of the quality which is required at the chemical fiber plant.

And in the third place it is necessary to find specific individuals and an organization which have the necessary authority and are interested in

efficient utilization of all resources. It seems that for Krasnoyarsk Kray such an organization could be the recently created interdepartmental management agency headed by an authority of the USSR Gosplan for the Eastern Siberian region. In any case it is time to stop the rubber carousel which is being revolved by people who are enamored of "departmental" spirit.

From the Editors

The author of this article has already been published in our magazine (1981, No 3), discussing essentially the same thing: how various departments have transformed the timber and chemical complex into a "conglomerate of industries which have little to do with one another." At that time the chief of the department of the chemical and light industry of the Krasnoyarsk CPSU Kraykom, V. G. Shuboderov, commented on his article. In his commentary he discussed in particular the fact that the author "quite correctly and at the right time raised the question of the need not only to create new complexes of interconnected enterprises, but also to improve them, and in this case -- to restore what has been destroyed."

Even more has been destroyed during the past 3 years. Enterprises of the Krasnoyarsk timber and chemical complex that are under the jurisdiction of the USSR Ministry of the Petrochemical Industry and the USSR Ministry of the Timber and Wood Processing Industry have been completely reoriented toward intrabranch ties. Recollections of a unified timber and chemical complex are receding further and further into the past.

Would it not be worthwhile to return to materials which were printed in 1981 under the headings "How the Complex Fell Apart" and "A Unified Management System for the TPK Is Needed." It seems that it would be worthwhile. Not only in order to draw attention once again to problems that have not yet been solved: neither a unified complex nor a unified system for management of the TPK is in existence, and no concrete measures have been developed to restore or create them. The fact is that in Krasnoyarsk Kray under the current five-year plan they have begun to form more than 10 complexes, which envision bringing together the interests of many branches. The problem has become many times more crucial. And thus, naturally, an alarming question will not disappear: will previous mistakes not be repeated in the new territorial production complexes? Will the numerous ministries and departments be able to do everything for the development of the productive forces of Krasnoyarsk Kray which in their day the Ministry of the Petrochemical Industry and the Ministry of the Timber and Wood Processing Industry were unable to do?

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## ARBITRATION COMMISSION SETTLES ISSUES WITHIN ASSOCIATION

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 84 pp 131-134

[Article by I. V. Budchenko, director of the Orsha active control instrument plant, formerly deputy director for economic issues of the Novopolotsk petroleum processing plant, and A. P. Trukhan, chief of the legal division of the Novopolotsknefteorgsintez production association: "An Arbitration Commission -- Within the Association"]

[Text] At the Novopolotsk petroleum processing plant, which is now called the Novopolotsknefteorgsintez association, there is an arbitration commission which regulates the interrelations between external and internal subdivisions of the association, plant management divisions and services, and productions and shops. Its organization was the result of the prolonged creative work of many plant services, but primarily of the legal and economic services. The commission is made up of the deputy director for economic problems (chairman), the chief of the division for standardization and product quality control (secretary), the head technologist, the chief of the production division, the head bookkeeper and a legal consultant. It arranges its work on the basis of enterprise standards that have been developed and approved.

The commission's main tasks are to restore rights that have been violated, and to reveal and eliminate causes and conditions which lead to failure to fulfill planning assignments, inefficiency and other violations of production and state discipline.

What issues are considered by the arbitration commission? The most typical include failure to fulfill export deliveries, deviations from the schedule for releasing petroleum products, above-plan idle time of railroad cars, complaints from plant subdivisions about product quality, tardy return of containers, overexpenditure of energy resources and reagents, reduction of the amounts of bonuses from the material incentive fund because of shortages in the deliveries of products and failure to make contractual deliveries, and other nonproductive losses, fines, penalties and profit failures. All the complaints from the preceding month are considered no later than the 10th of the following month.

At its meetings the commission considers all internal and external nonproductive losses that have been registered and establishes the subdivisions, services, divisions and individual workers who are to blame,



and it also determines the share of reimbursement for damage and the responsibility, primarily material.

The policy for documenting and submitting complaints is as follows. The subdivision or service fills out a complaint in three copies. One is submitted to the management of the subdivision which is at fault, the second -- to the secretary of the plant with a written receipt on the third copy. The complaint indicates the name of the subdivision or service against which it is being made, and also the subdivision which is making the complaint; the date on which it is submitted; the circumstances which were basis for submitting it; the demands of the complainant; the sum of damages and the calculation of this; a list of appended documents, and also other proof. The document is signed by the manager of the service or subdivision.

The deadline for submitting the complaint is 5 days after the subdivision has learned or should have learned of the violation. Within 3 days the subdivision that has been accused must submit a response which contains an admission of guilt or a complete or partial denial of it. The response indicates the name of the subdivision that is making the response and the one to which it is directed; the date; with complete or partial satisfaction of the claim -- the remitted sum; with complete or partial refusal to satisfy the claim -- the reasons for the refusal with a reference to the corresponding documents which justify the refusal; a list of documents appended to the response to the complaint, and also other proof. The response is drawn up in three copies and is signed by the manager of the subdivision. If there is no response to the complaint within three days, it is considered to be accepted.

Complaints which are voluntarily recognized as being valid and also the minutes of the arbitration commission are submitted to the plant bookkeeping office. The losses are included in the production cost of the products of the industries or plants which are at fault for the damages, and are reflected on a separate line in the section of the report on production cost. If the arbitration commission makes a decision to reduce the rating of the quality of the labor of those who are directly responsible for the damage, one copy of the minutes is submitted to the division for standardization and product quality control for registration on the plant "Day of Quality." Proposals to impose disciplinary fines on the guilty parties are submitted to the plant management. The implementation of the commission's decisions is supervised by the chairman and secretary of the commission, and, on their instructions, by other workers as well.

The material responsibility of the subdivisions that are at fault and also the calculation of the losses are determined with actual data in keeping with planning norms for the period in which the damage was done. Reimbursement is made for damage that was actually caused which the plaintiff could not avoid. And the amount of the monetary fines is significant. For example, fines for failure to deliver raw materials amount to 8 percent of the value of the products that were not delivered at intraplant prices. If installations have stood idle because of a lack of reagents, raw material, electric energy, steam, water or compressed air, because of a failure to meet the deadline for repair work or poor quality of this work, or a lack of transportation or loading and unloading mechanisms, the fines reach 10 percent of the cost of the commercial output which was not produced according to planning indicators. The sum of reimbursement for

late release of the final product to the commercial shop or late dispatch of the products by the commercial shop is determined in the amount 8 percent of the value of the products that were not delivered at intraplant prices for the 10-day period.

One of the goals of our commission's activity is to achieve more rhythmic operation of the enterprise. While in the first and second 10-day periods of the month products were delivered in excess of the plan and the plan for the release of products was not fulfilled in the third 10-day period, a claim is made for the sum of products not delivered during the course of the month.

The commission checks on efficient utilization of energy resources. Condensate that is not returned is paid for at 5 times its value. Above-normative expenditure of electric energy is included in the losses of the productions and shops that are at fault in an amount 5 times as great as its value, and thermal energy, fuel and water -- twice the amount. Above-plan losses of petroleum and petroleum products are included in the production costs of the shops and productions that are at fault.

The activity of the arbitration commission encompasses the work of practically all subdivisions of the association. Thus for delivery of semimanufactured products and components which have deviations from the standards of the enterprise, even if these products can be used, the manufacturer pays to the consumer a fine in the amount of the losses that are sustained, but no less than 20 percent of the cost of the semimanufactured products or components. If orders for services and work that is included in the plan of auxiliary shops are not filled on time, the fine is in the amount of 30 percent of the complete planned value of these jobs and services.

Measures are being taken against raising the orders for raw materials, reagents and processed materials. Divisions for material and technical supply and technical divisions have the right to impose on autonomously financed subdivisions a fine in the amount of 20 percent of the value of the above-normative residuals and nonliquid assets that have been formed in the report period. Fines, forfeitures, penalties and other nonproductive losses of the plant are included in the production cost (estimated expenditures) of the subdivisions that are at fault in the full amount for the month in which the plant sustained the losses. If the estimated expenditures of the guilty plant are insufficient to compensate for the losses that have been sustained, its management and collective are deprived of all of their bonuses for the month in which the losses were sustained.

The public at large participates in the work of the arbitration commission, complaints are examined with the participation of the concerned parties, and leading specialists of the enterprise are invited. All this creates conditions for an objective resolution to complaint issues and creates a situation of irreversibility of material and disciplinary responsibility of the guilty subdivisions, services or individual workers. As a result, for a long time there has been a positive balance for fine sanctions, the autonomous financing responsibility of the subdivisions and services for the fulfillment of planned assignments has increased, labor and production discipline have improved, and, consequently, there has been improvement in the technical and economic indicators of the enterprise.

We think that the experience and organization of the arbitration and complaint work at the plant is producing positive results and deserves the attention of other enterprises of the country.

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CSO: 1820/121

## NUMBER OF SUBORDINATES UNDER MANAGER'S SUPERVISION DISCUSSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 84 pp 135-139

[Article by L. I. Lekhtsiyer, candidate of economic sciences, department of organization and methods of management of public production, Moscow State University imeni M. V. Lomonosov: "Range of Authority of Enterprise Managers"]

What is the effective number of subordinates (range of management) for managers of enterprises and associations? Doctor of Economic Sciences L. N. Kachalina thinks that this number is five, and if the workers are not involved or not very involved in one another's work, it can be increased to ten and more.\* In the opinion of Prof. A. M. Omarova, the average number of subordinates can range from three to eight at the higher levels of management of the enterprise or association, and from seven to twenty at the lower levels.\*\* The official methodological materials recommend 6-12 subordinates for managers of functional subdivisions and 5-8 for managers of enterprises.\*\*\*

Unfortunately, in literature one extremely rarely encounters descriptions of actually existing ranges of management and factors which condition various deviations from the average numbers.

In 1981-1982 we conducted an investigation of 40 enterprises and production associations of various branches of industry. We examined five groups of managers -- directors, deputy directors, head specialists and division chiefs. The overall number of subjects in the research was more than 300. The object of observation was the budget of working time and the range of management of the managers.

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\* Kachalina, L. N., "Nauchnaya organizatsiya upravlencheskogo truda -- orgproyektirovaniye" [Scientific Organization of Management Labor -- Organizational Planning], Moscow, "Ekonomika", 1973, p 241.

\*\* Omarov, A. M., "Sotsial'noye upravleniye" [Social Management], Moscow, "Mysl'", 1980, p 170.

\*\*\* "Arrangement of management staff at enterprises and associations. Interbranch methodological recommendations," Moscow, 1974, p 69.

The study of the budget of working time of the managers showed that it can be divided into two parts -- individual independent work and contacts with administrative workers (see Table 1).

The analysis of the data showed that the higher the position of the manager, the longer his working day. The actual length of the working day of the director is 31.2 percent greater than the norm, and, taking into account work on Saturdays, 44.9 percent greater. The director spends an average of 1.5 times more time in production than the rank-and-file worker of the enterprise does.

Shop chiefs have the second longest working days. Like directors, they are line foremen, that is they are responsible for all problems involving the shop of which they are in charge. These two categories of managers have the most lengthy contacts with workers of the administrative staff--79.4 percent and 79.6 percent, respectively, of the budget of working time.

In terms of the content of their work activity, managers of all levels of management combine the "roles" of administrator and specialist. But this combination is different for each level of administration. For example, a division chief spends a greater part of his working time as a specialist and a lesser part as an administrator, while the head engineer, conversely, spends more time as an administrator. The plant director spends almost all of his time on administrative activity.

Table 1. Time Budget of the Work Day of Managers, in Hours

	Director	Deputy director	Shop chief	Head spec.	Division chief
Actual duration of work day	10.50	10.41	10.45	9.83	9.03
Contact with ad- ministrative workers	8.33	8.13	8.32	7.18	6.46
Individual work	2.17	2.28	2.13	2.65	2.57

Manager-administrators, as a rule, are in charge of several different kinds of administrative work and devote a greater part of their time to contacts with subordinates, but they do not usually intervene in the content of their activity; they formulate assignments for their subordinates and grant them the right to carry them out independently.

Manager-specialists are in charge of the performance of homogeneous functional jobs. They intervene in the immediate occupational activity of their subordinates: they formulate and adjust assignments, provide methodological and occupational guidance, and actively influence the final results. The difference in the content of the occupational activity leads to a situation where the budgets of working time of the manager-specialists differ significantly from those of manager-administrators (see Table 2).

Managers interact not only with their immediate subordinates, but also with the subordinates of their subordinates. Contacts with them are fairly

frequent and lengthy. They must be taken into account. There are several problems in determining the number of subordinates of the managers, which arise because the actual number of subordinates is considerably greater than that indicated in the table of distribution.

Management practice shows that managers frequently turn to workers who are not under their direct jurisdiction, bypassing the lower manager. This is especially typical of manager-specialists. It seems that this is the result of the existence of both formal and informal administrative structures in each organization, the existence of officially established interconnections and those which are the result of the "human factor" in management and are formed during the process of management activity in order to overcome bureaucratic limitations and barriers. The actual number of subordinates with whom the manager actually interacts, according to the data of our research, is greater than the official number of subordinates -- 1.8-fold for manager-specialists and 2.5-fold for manager-administrators. For example, according to the table of distribution of positions, deputy directors have an average five subordinates, while they actually have 10-12, and directors officially have 8-10 subordinates while in reality they have more than 20.

Table 2. Duration of Managers' Contacts, % of Overall Work Time Budget

	¶ Director	¶ Deputy director	¶ Shop Chief	¶ Head Special-	¶ Division chief
Duration of con- tacts with					
Management	16.8	27.5	35.5	30.5	30.2
Colleagues	3.5	10.4	10.0	10.4	12.5
Subordinates	58.2	46.7	50.0	46.5	45.4
Outside organiza- tions	21.5	15.4	4.5	12.6	11.9

A special investigation was conducted to reveal managers' opinions about the qualitative evaluation of their own work and their subordinates' activity. Various groups of managers evaluated their own activity and the work of their subordinates on a 5-point scale. They rated the difficulty, importance, diversity, instability, independence and skill requirements of the work. The managers' evaluations were compared with their evaluations of their own work. The results of the evaluation for two groups of managers -- head specialists and division chiefs -- are presented in Table 3.

The figures show that for head specialists their own opinion and the evaluations of managers were close when describing the importance and difficulty of the work. Moreover, the evaluation of the importance of the work of head specialists by their managers turned out to be higher than the evaluation of the specialists themselves. The head specialists gave a lower rating to the difficulty, importance, diversity and independence of their activity than they did to their own qualifications. This shows that the data of administrative staff workers are not used effectively enough.

Table 3. Evaluation of Managers' Activity, in Points (highest number - 5, lowest - 1)

Position	Qualitative parameter of management activity	Own rating	Managers' evaluation	Average rating
Head special-ists	Difficulty	3.50	3.33	3.42
	Importance	3.77	3.83	3.80
	Diversity	3.77	3.05	3.41
	Instability	3.27	2.77	3.02
	Independence	3.72	3.38	3.55
	Qualifications	3.88	3.44	3.66
Division chiefs	Difficulty	3.53	3.22	3.37
	Importance	3.76	3.61	3.68
	Diversity	3.42	3.05	3.23
	Instability	2.76	2.77	2.76
	Independence	3.53	3.11	3.32
	Qualifications	3.42	3.55	3.46

Thus the range of management of managers depends on a whole number of factors, among which one can single out:

the content of the activity (significance, importance, difficulty and diversity of the work, deadlines for assignments, irreversibility of consequences, and the availability of independent individual work);

the place occupied in the hierarchy of administration (the position of the manager, the actual ratio between rights and responsibilities, the availability of consultants, assistants and secretaries);

the personal qualities of the manager (professional qualifications, practical experience, memory and condition of health);

the level of organization of labor (regulation of management, organization of work positions, utilization of technical means);

personal qualities of subordinates (occupational skills, practical experience, attitude toward work);

external factors (stability of organization, style of work and management, and so forth).

The research we conducted showed that manager-administrators actually have a wider range of management than do manager-specialists. One is faced with the contradiction between the official recommendations which state that "with a higher level of management the number of the manager's subordinates should decrease," and the practice of management, which shows that the number of subordinates at the higher levels of management is considerably greater than the number at the lower levels. For example, the actual range of administration of the director covers more than 20 subordinates, while that of the division chief is nine.

An analysis of the organization of managers' work shows that there are significant reserves for increasing management efficiency at enterprises and production associations by enlarging the scope of management and efficiently utilizing administrative staff workers. We must do serious analytical work to refine the content of management activity, to improve the norm setting for the labor of management workers, to develop effective norms and ranges of management, and to improve the system of wages for management workers.

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## INCENTIVES FOR REDUCING DOWN TIME DISCUSSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 84 pp 140-141

[Article by A. A. Voronov, candidate of economic sciences, Kuban State University (Krasnodar): "Shift Work, Down Time and Incentives"]

[Text] The provisions concerning bonuses that are in effect at enterprises for workers, employees and engineering and technical personnel, even when they have points and sections concerning material incentives for improving the utilization of production capital (which is far from always the case), envision incentives for a very broad group of workers. And in the majority of cases when workers receive bonuses they do not know exactly for which indicators they have been given.

Frequently the overall bonus is comprised of such miserly sums of incentives for individual indicators (3-5 rubles and less) that it is simply inconvenient to show them individually. One way or another it is necessary to pay the bonus for the whole group, which leads to depersonalization and reduced interest on the part of the actual performers of the work in the final results of their activity. The experience of the leading enterprises of the country shows that the bonus system can be appreciably improved. For example, Leningrad enterprises are waging a struggle to raise the coefficient of shift work of equipment. To do this they are widely using material incentives for workers who work on the second and third shifts (they pay a bonus for work on the second shift in the amount of 10 percent, and the third shift -- 15 percent of the piece-rate earnings). At a number of enterprises the payment of bonuses for work on the second and third shifts is augmented by free food on the third shift and even special privileges in providing dwelling space.

In the Leningrad optical-mechanics association imeni V. I. Lenin, in order to increase the responsibility of the foremen for increasing the coefficient of shift work of equipment, a special system of material incentives has been created whereby the amount of the bonus for the foreman is calculated according to the results of the work of the section for the month, depending on the increase or reduction of the coefficient of shift work.\*

\* Vorotilov, V. A., Cherevan', V. N., "Puti povysheniya smennosti ispol'zovaniya oborudovaniya" [Ways of Improving Shift Work With the Utilization of Equipment], Moscow, 1979, pp 62-63.

As a result of this kind of stimulation and also a number of organizational and technical measures, at Leningrad enterprises there has been an appreciable increase in the coefficient of shift work of the equipment, its intrashift down time has been reduced, and many other economic indicators have improved.

We think that this experience should be extensively disseminated throughout the country's industry. It can be introduced, for example, in the following variant. All indicators are compared with their values during the preceding calendar period.

The coefficient of shift work. For each 0.001 point of increase in this indicator, the shop chiefs, foremen, brigade leaders, and chiefs of the

personnel division and the division for training personnel at the enterprises are awarded bonuses in the amount of 2 percent of their monthly salaries.

An increase in the average coefficient of extensive loading of equipment. For every 0.01 point of increase in this indicator, bonuses are awarded to the the shop mechanics and handimen in the amount of 3 percent of their monthly salaries.

Reduction of down time of equipment as a result of reducing the breakdowns. For every 0.01 points of reduction of the level of down time, shop mechanics and repairmen are awarded bonuses in the amount of 5 percent of their monthly salaries.

The application of these suggestions will make it possible to add efficiency to the stimulation of the labor of workers who are responsible for efficient utilization of production capital at enterprises, to make sure the bonuses go to the the right people, and to contribute to revealing reserves for the output of products with existing capacities without additional capital investments.

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## WAYS OF DIVIDING UP VACATION TIME EXAMINED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 84 pp 142-144

[Article by A. V. Yakimets (Chernigov): "How to Distribute Annual Vacations"]

[Text] There is always a lot of irritation for oneself and others until the schedule for those who wish to take annual vacations is finally firmed up. And if you try to gain any advantage it turns out even worse. I have not managed to find a method of calculation in the literature that is available. We had to think up our own.

During the 2 years in which the methods we developed have been used there has not been a single complaint. The subordinates have entered into competition as early as the winter months. In the second year the majority of the requests began to coincide with the possibilities. It takes about 2 hours to draw up the schedules for the 26 members of the collective. The method is so simple that the work of distributing the vacations can be assigned to any subordinate. Here is how it looks.

We divide all the months of the year into six groups. We assign points to each group according to Table 1.

It is understandable that May is not equal to September, April to October, and so forth. The combinations can vary depending, for example, on local climatic conditions.

Then one draws up Table 2, which includes information about the vacation time for the 2 preceding years and the corresponding points from Table 1.

The individual with the most points, naturally, is given the advantage in selecting the month (or even day) for his vacation. For example it is necessary to distribute vacations among 24 workers (two workers for each month of the year). Ivanov, as the person with the most points, has selected July. We enter him on the schedule.

The next to make a selection is Sidorov, the one with with second largest total. We continue until all the free lines are filled in. Of course the person with the greatest number of negative points, Petrov (1-2), does not have to make a choice.

Such is the ideal. But in reality it also necessary to take the following into account. In the first place, what happens if several people have the same number of points? Two paths are possible here: 1) to increase the figures for 1980. The person who has the least points has the advantage; 2) if it is not possible to obtain the figures for 1980, one uses the points from 1982 (the last year's vacation). Note that there is less precision with the second method.

Table 1.

Months	Points
1. July, August	-3
3. May, September	-2
2. June	-1
4. November, December	+3
5. March, February, January	+2
6. April, October	+1

Another situation: a worker went on vacation on 31 May and returned on 29 June. From which month should his points be taken: May or June. It is more logical to take the time that was actually used, that is, June. In other words, the month in which the majority of the vacation occurred.

A third situation: in 1982 (or 1981) one of the workers did not take her regular vacation, since she first had a statutory leave and then a leave to care for her child. For such a case it is necessary to draw on the figures for 1980 and include them in the sum of points instead of those for the year just ended.

Table 2.

Worker	Date of beginning and end of 1982 vacation	Points	Date of beginning and end of 1981 vacation	Points	Sum of points
Ivanov	2.12-19.12	+3	14.04-03.05	+1	+4
Petrov	11.07-28.07	-3	1.10-18.10	+1	-2
Sidorov	11.11-28.11	+3	2.09-18.09	-1	+2

In the fourth place there are also those who are entitled to benefits (a more complicated issue). Let us say that there are two people entitled to benefits. There are six openings during the summer months. We do a simple calculation:  $6-2=4$ . That is, there are four openings during the summer months left for people who are not entitled to benefits. From the main group, according to the accumulated sum of points, one singles out four people who wish to take vacations during the summer. Thus six people have been earmarked to go on vacation during the summer. All that is left is to distribute them among the months. Knowing the accumulated sums and having

preserved the known policy for awarding bonuses according to points, it is not difficult to do this.

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Schedule of Vacations for 1983

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January	March	July	August	December
1.	1.	1. Ivanov	1. Sidorov	1. Vasil'yeva
2.	2.	2.	2.	2. Petrov

---

Fifth, out of personal motives the person can voluntarily reject the best month (at the time the selection is offered). Then, in order to calculate the vacation for the next year (1984) he receives an incentive coefficient which is added to the sum accumulated in 1983 and 1982.

The formula for the calculation is the following:

$$K = \frac{K_v - K_p}{2}$$

where:  $K_v$  -- the number of points of the selected year,  $K_p$  -- the number of points of the proposed year.

For example, a worker could have gone on vacation in June 1983 (-2) and expressed the desire in October (+1). Then

$$K_p = \frac{(+1) - (-2)}{2} = 1.5 \text{ points}$$

When the 1984 sum is calculated this worker will be given 1.5 extra points.

Remark:  $K_p$  should not be used when changing a worker within a group with positive points since this could affect the healthy competition during the winter months.

After the workers are placed a rough draft of the schedule is posted for familiarization, and those who wish can exchange the months of their vacations. Here they should know that, in the first place, the points for the following year will be counted according to the time of the actual vacation; and, second, an incentive coefficient is not given in this stage.

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## RESPONSE TO PROPOSED METHOD OF DISTRIBUTING VACATION TIMES

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in  
Russian No 4, Apr 84 pp 144-145

[Article by A. A. Popov, deputy personnel director: "Mathematics and Education"]

[Text] The proposed methodology, "How to Distribute Annual Vacations," was considered in a number of collectives of the bureaus of labor and wages of the shops and was discussed at a conference with the participation of the plant's deputy director for personnel with the participation of managers of the personnel division, the division for labor and wages and the chiefs of the labor bureaus of the main shops.

The participants in the conference expressed no principal objections to the method of calculating vacations. The use of the simplest mathematical devices will make it possible to introduce greater precision, substantiation and fairness into the complicated process of forming the vacation schedule, but, unfortunately, it will not rid those who compile it of "irritation for themselves and others," as the author of the methodology asserts. The difficulty consists not in a lack of a methodology, but in the existence in the subdivisions of large groups of workers who are minors, students of correspondence VUZes and tekhnikums, students in evening classes, war veterans, working pensioners, women with two or more children under 12 years of age, disabled workers and people suffering from occupational and chronic diseases, each of whom lays claim to a vacation in July or August. If one adds to these the parents who, according to the medical references, must improve the health of their children in the south, people who intend to repair homes, gather firewood, or store up hay for their aged parents, to take examinations in the VUZes and so forth, the process of drawing up and approving the annual schedule of regular vacations turns into an unpleasant affair for every manager.

What will help here is not so much mathematics as educational work with each member of the collective on the part of the administration, party organization, trade union committee and bureau of the AUCCTU.

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## DESIGN BUREAU MANAGER DESCRIBES DAILY ROUTINE

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 84 pp 146-170

[Article by V. Sakharov, design bureau manager (Moscow): "My Days"]

[Text] Our design bureau is not large, having a total of about 200 people and five production divisions. (Incidentally, in my view, this is the optimal number for any kind of institution. This organization is mobile and easy to control. It has the optimal distance from the manager to the designer.) But the design bureau has many tasks: we are responsible for achieving scientific and technical progress in the entire subbranch.

We are creating simple, but unique designs, we are developing technological processes, standards and technical specifications for our products, we are inventing means of automation, and we are designing shops and productions. And, moreover, we do a mass of all kinds of office work for the association of which we are a part.

The objects of our subbranch, as a rule, are constructed with the tempo of a storm (the term "storming" is somehow unethical), and therefore in our design bureau we usually work at the same tempo. There is a mass of problems, tasks and chores, and a pile of papers, letters, telegrams and teletype and telephone communications, frequently of an urgent nature.

The majority of these problems pass through the director's office, and this is not good. But for our discussion, this is an advantage. The fact is that the director's office is mine, and you and I have the opportunity to follow many curious situations that arise in our small design bureau.

### I Have People

Morning. As usual, I come to work a couple of minute early in order to sit quietly alone. I stop at the entrance to the building and look with irritation at the broken end of the rain gutter and the iron scraps that have been tossed into the doorways. I go upstairs to scold the maintenance people, but they are not at work yet, and by the time they arrive I will have forgotten about my intention.

I go into the office and turn on the intercom. I take yesterday's newspaper and read it. But nothing comes of that -- all kinds of thoughts about my job slip into my mind. I put the newspaper aside and begin to enter the day's

business on my calendar: whom to call in, whom to telephone and what to read... In passing I recall the business of the next few days. I enter them in my daily schedule which is on the right-hand side of my desk. I enter the more serious and long-term business in a card file with names. These names include the management of the association and the plants, the division chiefs, and the head specialists of the design bureau.

The calendar, the weekly schedule, the card file and the selector -- these are my scientific organization of labor. I wanted to add a microcalculator, but I remembered that after numerous repair jobs I told the supply workers to return it to the manufacturing plant with a letter saying that it was unsuitable. It was necessary to acquire an imported one...

The telephone rings. It is beginning...

"Hello, Sergey Ivanovich!" -- the secretary Katya glances into the office.

The intercom lights up. I hear the voice of Vasin, my deputy director for the management section:

"May I see you?"

"Well, come in," I reluctantly give him permission.

I instructed him to ask for permission on the intercom, but I could not break him of the habit of coming to see me every 10 or 15 minutes. I tried at first, but then I gave up. I came to understand that if Vasin did not have the opportunity to come to the director every half hour and report on his successes, he simply would not be able to work. It is as though some little batteries were installed in him from time to time and he comes to me to have them charged.

And so Vasin is sitting in front of me and reporting heatedly:

"Yesterday I had an argument with the association, but I "scared up" a dump truck. Now they are going to ship in the solution. There are three painters and two carpenters working in the annex today. I gave the chief, Khoz, a bottle in repayment for this..."

I do not know what good all this does me. But I remain patient.

Vasin leaves, and I draw my correspondence file toward me. What a mess!

The holidays will be here soon and the file contains several dozen greeting cards for managers of related organizations. Should I read them or not? An eternal question. I could, of course, sign them without reading them. But I remember during past holiday seasons I have discovered among the recipients two people who were dead and one who had been fired, and so with a sigh I begin to check the surnames and initials...

And this in broad daylight!? I, the director of a design bureau, must read every letter. And I find a mistake in every third one. Or are we the only ones who have this problem? Probably not. And must we really correct every typo, every grammatical error? May we just forget about them. No, after all, my signature is on these. And in general one must not ignore mistakes.



True, too sharp a reaction to mistakes does not do any good either. I remember one foreman who took away a quarter's bonus from a person who was guilty of putting one too many letters in his name...

"Sergey Pavlovich, " Katya's voice is on the intercom, "a comrade has come to see you regarding work. You gave him an appointment.

Here is another problem: hiring. Is it necessary for me to speak with every worker? After all, at one time when I was in charge of a division I did all that myself and was unhappy when the director intervened. On the other hand, I remember the time when they brought a bunch of alcoholics into the construction division without my knowledge, and so now I interview all applicants for management positions. I look them over now, but I also smell to see if they have been drinking... The personnel problem is a major one. I talk with the candidate for a half hour ...

Vasin telephones. Apparently his battery has run down.

"May I see you, Sergey Ivanovich?"

"No, I am busy."

"Well, just listen then," he sighs.

"All right, go ahead."

"You understand, Sergey Ivanovich, that we need a car -- we have to pick up some parts in Kursk, and association will not give them to us. They said we should look for the cargo around Kursk, but then on the way they will stop us and send us God knows where. An empty haul ...

"It is also a problem for me! Load whatever you want to -- brackets after they have been tested -- and in Kursk get rid of the ..."

I open up the correspondence file again. They have finally prepared a work schedule to accommodate the plan for the new plant ... But what is this? The time for completion is the fourth quarter. It should have been the third quarter! And, moreover, there is not a single certificate on the schedule! I call the chief of the construction division, Aleksandrov.

"I want you and everyone else who is involved to come to my office at once."

Within a couple of minutes the two division chiefs and the two head designers of the plan come into my office.

"Well, what have you got to say," I take the offensive, "you have been fooling around with the schedule for a month and then you give me ..."

"Here we have not yet found a common language," Aleksandrov nods toward the other chief, Gavrilov. "He will be 2 weeks short of meeting the deadline and that is why we cannot manage to complete the project in the third quarter.

"It is because we have not found a common language that we cannot get along," I try to make a joke.

"You understand, Sergey Ivanovich," Aleksandrov begins to explain, "there is a lot that is unclear in the plan: the products list has not been determined, the area and number of personnel have not been established... I think that in a situation like this it is superfluous to draw up a schedule."

"Well, what do you suggest? That we stop working?"

"No, what would be the point of that? The technologists can continue to work," he nods toward Gavrilov again, "but there is no need for a schedule yet, the schedule can come later..."

"I could understand it if you suggested that we stop the work altogether because of a lack of initial data," I gradually take the lead, "but when you suggest that we continue the project without a schedule, I do not understand! How can a manager advise working without a plan?"

The telephone rings. I pick up the receiver. It is my wife.

"I have people in my office ...," I say in an icy voice. My wife asks me to buy something. I write it down on my calendar and end the conversation.

Aleksandrov, Gavrilov and the two head specialists lay out their difficulties.

"Well, what about this," I interrupt them. "Could you not agree among yourselves and come to a voluntary decision. Divide up these two weeks that are the problem: reduce the time period for the technologists by one week and for the construction workers by one week, and that will take care of it."

They all laugh with relief.

"Could you not have decided this by yourselves?" I add. "No Solomon is needed here -- it is not a matter of cutting a baby in half... Please do not come to me with any more problems like that."

The door had no sooner closed behind them than a worker from the design division burst into my office.

"Sergey Ivanovich, something terrible is happening! They have given our division the worst meat."

"What meat? What are you talking about?" I try to understand, thinking that I am going to have to make a note to Katya not to let anyone in to see me unannounced.

"In the orders," she explains. "The other divisions crowded in earlier and selected the best meat for themselves, and they left only bones for us ..."

Ordering groceries from one of the best food stores in the city is one of the benefits of our organization. But there are plenty of concerns in connection with these orders: having someone in the design bureau who is authorized to maintain contact with the food store, providing transportation for delivery of the orders, and also straightening out misunderstandings like these ...

"How are the orders being distributed?" I asked the disturbed woman.

"Everyone takes what he can get," she answers with agitation. "They all run and grab the best meat."

I call the chairman of the trade union committee.

"Listen, Petr Ivanovich, we are having some trouble with the distribution of the food orders. All the division representatives should submit their orders at the same time, and you should not let each take what he can get ..."

One more problem solved.

But why should I have to solve all these problems? It is either I or the head engineer... How is it in other organizations? Well, in large institutions they do not come running to the director with problems like these. They go to the deputy or the division chief.

But still, as experience shows, if the director does not take an interest in such trivia, at least from time to time, there is disorder in the organization...

Time after lunch is worth only half as much as time before lunch. I notice this even with myself: it is necessary to force myself to get into a work rhythm.

I look at the calendar. What is this I have written? What is a "bat."? My wife asked me to buy something ... A baguette, maybe? But she did not say anything about bread. What is a "bat."? What a charade! I will have to make a telephone call and find out.

It turns out that "bat." is little battery. Just a joke!

The telephone rings. An old coworker from the design bureau in local industry has remembered me.

"The higher planning agencies have accepted your suggestion," he tells me.

"What suggestion?"

"Oh, remember when you were still in our design bureau, when you became division chief you suggested that they give you the wage fund and the plan and permit you to establish for yourself the number of personnel and the salaries of the designers?"

"Yes, yes," I now remember. "And at that time I promised to achieve a savings on the wage fund of about 10 percent, and also to overfulfill the plan..."

"They did not accept the idea at the time," continues my coworker, "but now they have adopted it. True, 15 years have passed, and it is being carried out only in Leningrad, and there only as an experiment..."

"This is just the beginning!"

"Do not be too happy," my friend warns me, "I do not think this will go past Leningrad. It is just that the personnel problem is very bad there..."

At 2 o'clock there is a conference with the deputy general director. Knowing how committed we are, I instruct Aleksandrov to find out whether the conference is still on. He says that everything is in order, and we depart.

It turns out that the deputy director who had called us there had just left for somewhere. Slamming the door angrily, I returned to my office. After a short time the phone rang. The deputy had shown up, and the conference had been rescheduled for 3 p.m.

I sat down to prepare again -- a serious task.

For 3 years now, according to a special decree, we have been planning the experimental center for our scientific production association. If one is to be honest about it, our design bureau is not capable of creating such a plan, and it should have been assigned to another planner. But it is a very prestigious job and, on the initiative of the former chief of the construction division, who has now been relieved of his position, the design bureau took on this task which was beyond its capabilities. One unpleasantness followed another. For a long time we were unable get rid of the composition of the object, and then we sought for and invented technological processes for new items, and with great difficulty designed new testing stands ... The association took an unrealistic position as well: it wanted very much to create the "largest complex in Europe," and we were penalized for exceeding the limits of space and numbers of personnel which were permitted by the city soviet. We hoped that the limits would be increased before they were finally approved. But by the time the technical plan was completed, the situation with respect to space and especially labor force in the city had become much worse, and they cut back our plan. The scientific production association issued an order: to adjust the plan immediately. To eliminate one thing and cut back something else without making any fundamental changes, the only thing that was important was to stick to the established limits and get the plan approved as quickly as possible. They said we could do everything over again when the construction was in progress.

After serious consideration I finally decided to do what should have been undertaken a long time ago: to notify the management that we were acting stupidly and that the time had come to stop wasting state money. It was necessary to put a stop to the adjustment of the technical plan which was almost completed, to draw up a new assignment for planning, and to develop a new plan -- but a realistic one this time.

With this decision it was automatically admitted that more than 100,000 rubles had been spent for nothing.

This was the serious step for which I was preparing. First I gathered my associates together, invited representatives of the general planner and the capital construction division of the association, and rehearsed the forthcoming conference.

And then, finally, it began ... I outlined my position. The deputy general director received my suggestions negatively, but he was not as strongly negative as I had anticipated. This was possibly the result of some disturbance about the delay of the conference.

The head engineer of our project was the next to speak after me. He based his speech on my suggestions. The general planner spoke next. He parroted the ideas I expressed. The chief of the OKS spoke as though it had already been decided to develop a new plan.

When we began to compose the minutes I formulated my proposals with a somewhat questioning attitude, and then the deputy general director said: "We, of course, that is the way we shall write it!"

I left the conference quite impressed. Such important decisions are made so lightly! But I was bothered, and then got over it ... Then I was convinced once again that it is necessary to be bolder, and to take the initiative.

"... And What is Bad"

It seems to me that certain people have either lost sight of or completely abandoned certain most important criteria. They are quite well aware that it is good to save a drowning man, to give blood free of charge, and, finally, to give an old lady their seat on the bus. But it has somehow been forgotten that it is bad to report the completion of a job that has not been finished, or to hide a piece of soap under the institutional toilet, or to drink vodka while on the job. And these people should recall the sacred commandments which have taken form over the millennia of mankind's existence: "thou shalt not steal," "thou shalt not lie," "thou shalt not kill."

About "thou shalt not lie." It is interesting to observe the evolution of this concept from one's own experience. I recall that up until I was about 15 years years old my attitude toward this commandment was somewhat arbitrary. Then something happened and the concept of "thou shalt not lie" suddenly became stronger, grew and literally became a law for me. With the uncompromisingness of youth I divided all of mankind into two halves: honest and dishonest.

The subsequent evolution of this concept began when I reached the management level. It became clear to me that under certain conditions and in certain situations it was impossible to be honest.

Now that I am a director, my conception is approximately as follows: "One must not lie. But if it is extremely necessary to the collective and in exceptional cases, one may do it." I still have an uncompromising attitude toward self-seeking lies, but when it comes to the interests of the design bureau, I consider it possible to stretch things a little.

I understand that my ideas are subjective: I myself establish the limits of the permissible for myself, and I am the one who decides upon exceptional cases. But I manage to stay within the limits which allow me to remain an honest person both in the opinions of those around me and in my own eyes.

As I have noted, it is most frequently necessary to cross the boundaries of truth because of the imperfection of various established conditions. Here is one example.

The design bureau is not capable of carrying out an important assignment: it does not have the necessary specialists. For our ordinary planning work we do

not need these specialists, but for this specific subject they are needed. If we had some additional capabilities, for example a absentee fund, or if these specialists had the right to work in an additional occupation, there would be no problem. But neither of these is the case. And the specialists bring in the labor books of their mothers and aunts, and we assign them as cleaning women, warehouse workers, and so forth. Here is deceit for you. But what can we do?

During one quarter in the design bureau there were two unpleasant incidents in a row. Two division chiefs, Gavrilov and Aleksandrov, allowed the report to be inflated. Neither of them had completed their projects, but reported that they had. And the most surprising thing is that there was no need for this deceit: they could simply have adjusted the plan -- neither the bonuses nor the commitments would have suffered. Why did they do what they did? Because this way was less trouble: there was no need to write letters for the adjustments or to take these letters to the necessary higher-ups... It turned out that neither one of them had any moral restrictions.

When the case was opened up, Aleksandrov said:

"Just think, we completed the plan a couple of days late. But we did complete it!

I was disturbed for a long time and told him about a sense of responsibility, about conscience...

The conversation with Gavrilov was in a different key.

"How could you do this?" I asked him, looking him in the eye. "If I cannot trust you, whom can I trust? You are an honest person, and you have never done anything behind anybody's back! One can somehow understand that one might report the introduction of a machine tool which was not really introduced by the fault of the plant: it is a shame to deprive the designers of their tiny bonus, since they were not guilty of anything. This is a holy lie. But here only you are to blame..."

Gavrilov bowed his head low.

"Do you know the story about an holy lie?" I ask him in order to relieve the tension. And I tell him one of my favorite stories.

"Once upon a time a knight was sentenced to death. Not long before his execution his mother came to him and said: I shall go to the king and beg for mercy for you. If I come to the execution in a white dress, it will mean that he has spared you, and if I come in a black dress it will mean that he has not. The mother came to the execution in a white dress. The knight's face brightened and he followed the hangman with his head held high, dropped calmly to his knees, and placed his head in the noose without fear. He knew that they would not execute him. But he was decapitated. This was a holy maternal lie...."

"But you," I said to Gavrilov, "have falsified reports..."

Of course they should have been held up as an example and punished, but I did not do this. Sometimes you think that if you cannot provide rewards for good

work then you do not have the right to impose punishment for bad work. And sometimes a good talk is enough.

Aleksandrov may be the weakest division chief in our organization. He has a flabby spirit, and he is irresponsible and passive. I have been looking for someone to replace him for a long time. And suddenly -- a piece of luck: exactly the person who is needed appears in the design bureau. Andreyev is a planner with years of service, he has administrative work experience, and he knows our subbranch well. I also liked his external appearance: he is tall and strong, with a loud authoritative way of speaking and with a high, graying brow. I received him, as they say, with arms wide open: I spoke frankly about the merits and shortcomings of our organization, and about the difficulties of working with a scientific production association. We signed him up as a head specialist, but I immediately thought that he would replace Aleksandrov. After a certain amount of time I mentioned this to Andreyev himself. He straightened his shoulders and said ceremoniously: "Sergey Ivanovich, I shall not let you down!"

After this we talked many times and discussed the situation in the division and the design bureau as a whole. I liked him more and more. His solid, confident manner of behavior appeared to special advantage over the indecisive Aleksandrov with his lack of confidence in himself.

But then one time the following happened. At the end of the day I called the construction division and asked to have the leader of the construction group, Mukhanov, come to see me. Time went by and he did not arrive. I called again and asked that they look for him. They could not find him. Putting this fact together with the fact of the absence of the division chief, I asked a personnel worker to check on the presence of the workers, paying special attention to the construction division. After a certain amount of time she notified me that the entire construction group was absent.

On the next day they brought the notes of explanation to me. The engineers of the construction group wrote that they were dismissed by the group leader, Mukhanov, who explained that he was dismissed by the head specialist, Andreyev, and he asserted in writing that he did not dismiss anybody. The case ended with a memorandum from the division chief, in which he requested severe administrative punishment for the deceiver Mukhanov.

Quietly raging, I called in the deceiver. I gave him a burning glance:

"Explain your behavior."

"Sergey Ivanovich, I will explain everything," Mukhanov placed his hand on his breast. "Yesterday the entire division went to an exhibit..."

"Yes, yes," I interrupted him, "and I just underlined your group on the list. You have urgent work to do."

"True, Sergey Ivanovich, we have urgent work."

"So what the hell is going on," I could not restrain myself. "and why did you abandon this urgent work?"

"I had a very bad headache," explained Mukhanov, "it was hot, and the air pressure had changed... I complained to Andreyev, and he said: Well, you go on home. And then I left," Mukhanov dropped his eyes, "and dismissed the group."

"Do you understand how this looks?" I was agitated. "You were left to carry out an urgent assignment, and you walk off the job... What right did Andreyev have to dismiss you. Why did you listen to him? Do you understand that this makes you look like an idiot?" I burst out.

"Yes, now I understand," Mukhanov agreed, "I really do come out of this incident looking like an idiot."

"The more so," I added, "since Andreyev wrote that he had not dismissed anybody."

"I know," Mukhanov looked at me hopefully, "this morning he called me in, looked into my eyes and said: Remember, I did not send you anywhere. "

When Andreyev came in I was embarrassed to look at him.

"How could you write such a thing?" I nodded toward his explanatory note. "Wait!" I stopped him, seeing that he intended to deny it. "If you try to deceive me now, it will be too late!"

"Why did you not come," I continued, "and tell me that somehow or other you had done something stupid and dismissed Mukhanov... I would have reprimanded you and that would have been it. But now ... you have made a man look like a fool."

"All right," he waved his hand. "I will take responsibility for everything."

"No, there is no need to take the blame. If Mukhanov is a deceiver, he should be punished."

"All right, I am guilty..."

When Andreyev left, I sat for a long time with my head lowered. How could he deceive me that way when he was so new on the job! And then to "frame" a person... What should happen to Andreyev now?...

Life is always convincing me of the advantages of the truth. Here, for example, is the case of the inspector.

Last year the deputy general director called and told me that an inspector was coming to see me. The deputy was very nervous: "You have a lot of 'cover' jobs there: the secretary is registered as an engineer, the planner as a designer, ... Hide them all in the divisions and do not say anything to anybody!"

Until the early hours I was fretting about how to deal with the inspector: I wanted very much to lie and distort things. And I decided: when the inspector came I would reveal to him all of our secrets and explain that we had already petitioned the appropriate authorities in order to put the staffs in order.



To this day I recall how the deputy scolded me:

"Hair-brained boy! You have found a good person to be candid with! He will run your legs off.

I awaited the consequences, my heart frozen. But everything worked out, and I remember the inspector with gratitude. He did not fail to reward the truth. But I must admit that the experiment was risky.

There is one more important issue in which the criteria have somehow shifted and eroded. This is labor discipline. And this transformation cannot be rationalized by referring to the lack of connection between the results of labor and wages.

I recall one of the first days of my job as director.

The New Year's holiday season had arrived, and I had been awaiting it with uneasiness: festivities and parties were usually organized in the design bureau during this season.

Measures of this kind were officially prohibited. But I think that if they are conducted within a certain framework and not during working time, they can be useful since they weld the collective together. It is good when people are not bored with one another after so many years, and it is pleasant for them to be together in a nonworking environment.

And so on the threshold of the New Year I gathered the division chiefs together and warned them that there should be nothing during working time ...

But the next day I was torn away from my work by the tapping of feet overhead. I looked at my watch. Dinner had been over for 10 minutes. The tapping continued. They were dancing in the construction division!

I went up to the division and saw the tables set and decorated with bottles, the tape recorder blaring, and three or four excessively jovial dancers in the middle of the room.

"What do you think you are doing?" I choked.

"We are having dinner," they explained to me as though nothing were happening.

"In the first place, look at the clock, and in the second place, even if you were having dinner, that is no way to do it!"

Obvious dissatisfaction was reflected on the faces of the workers.

I asked two participants in the festivities to come into my office -- two head specialists.

"You have offended us, Sergey Ivanovich," they proclaimed.

"You are offended?" I snapped back.

"We celebrate all holidays this way, and it does not do you any harm."

"How can you drink vodka and dance during working time?" I was disturbed.  
"After all people are working all around you!"

"Well, just think, ever since dinner we have barely been able to restrain ourselves... And the vodka! Two bottles for forty people! No, you have offended the division a great deal, Sergey Ivanovich ..."

"How can you fail to understand ..."

I spent a long time explaining how disturbed I was by what had happened.

But some of them had nevertheless forgotten "what is bad." They had to be reminded. And a special role is played by management workers. The workers look at them and follow their example.

The manager's reaction to any emergency is extremely significant. One cannot be indifferent. Anything which cannot be countenanced should evoke a storm of protest from the manager. It must be stormy! I have observed so many times how a person's attitude toward an event has changed before my eyes under the influence of my emotional utterances. And frequently it has been sincere...

#### Too Many Hands

And again I am in my office. It is as though my armchair were magic: the minute I touch it I am overwhelmed by multitudes of all kinds of thoughts. And this time too, the minute I sat down in the armchair there was an entire storm in my head: I had to negotiate with the chief immediately -- I flung myself toward the telephone; I had to check to make sure the supply workers had gone to the airport for the cargo -- I pressed the button on the intercom; I had to clarify the latest variant of the design for the startup device ... No, this was not the way to do it; I had to put a stop to all this fantasy and relax.

I wrote a plan for the day on the calendar and gradually relaxed.

If I were told to depict the manager symbolically, I would represent him in the form of an oriental god with many hands. With his multitude of hands he does a large volume of business, and at the same time he keeps his subordinates working. And still he seems to me to be an eternal scholar, constantly engaged in solving various little problems and working out instructive conclusions from the material he has gone over...

But here the plan for the day has been sketched out, and one can begin to carry it out. Having taken care of a couple of immediate matters, I called Gurin in to see me. He is a young specialist from the design division. He has been dying to see me for a week already.

Gurin was disturbed and could not decide how to begin. I looked at him encouragingly.

"I have one technical idea here, Sergey Ivanovich," Gurin said finally. "In our division we have been trying to figure out for a long time how to make a reliable and inexpensive transitional connection of a copper contact with aluminum. And there is a simple solution: run a copper and aluminum plate

between them, a cladding piece, for example, and join it all together with bolts. For this is simple, and?" Gurin turns red from the strain and looks at me hopefully.

I sit silently in thought for a couple of minutes. The fact is that this idea, like many other technical ideas, is not new. Suggestions of this kind are constantly turning around in the heads, on the tongues and in the sketches of the designers. They change in form and are improved, they die out and are restored again -- and then it is impossible to establish who was the first to come up with them. Thus this idea had been expressed repeatedly, and I was prepared to discuss it.

"You understand, my dear friend," I said slowly, sketching his suggestion on a sheet of paper, "the idea, of course, is very tempting. But ... it has a number of shortcomings. In the first place, additional contact pairs appear, which has an adverse effect on the electrical characteristics of the connection. In the second place, there are additional bolt connections, which also has a negative effect on the entire unit, and, in the third place, the assembly, packaging and transportation of the connectors are more complicated. And, after all, we produce millions of them! So, in my opinion, the existing design is still better....

Gurin looked at my sketch and then said with a sigh:

"Yes, unfortunately, Sergey Ivanovich, you are apparently right."

I looked at him with sympathy:

"You know, when I first worked in design I had an interesting experience. Our division was solving the problem of mechanizing the assembly of threaded joints. Something new was suggested every day: vibration assembly, magnetic assembly, screwing on with rotational shock impulses -- nothing would do. And then I had a brilliant idea: thermal assembly. We warm the nut (thus expanding it) and we easily place it on the threads of the screw. Then the nut is cooled, its threaded opening narrows, and the threads of the nut and screw join together of their own accord.

"The picture of the fabulous assembly literally came to me in a dream. The automated lines, the assembly shops and the miraculous process: warming the nuts in an inductor oven, putting them through an accumulator into contact with the screws, and automatic assembly!

"But still I decided conduct an experiment before revealing my discovery. I placed a dozen nuts in a muffle furnace, warmed them, and began to place them on the screws. They would not fit! I heated them until they were almost red hot, but still no effect! Then I remembered about the strength of materials. I took down the reference book, looked up the coefficient of linear expansion of steel, and immediately understood everything. The look on my face at that time was much worse than yours is now."

Gurin left, thanking me for I know not what, and I began to read my mail. What an outrageous teletype message! From our designer, who is in the plant: "I cannot get anywhere with the plant management... Take urgent measures! ..." This is a direct distress signal. This dispatch put me in a good mood and I wrote a half-joking resolution to the chief of the division:

"Save your emissary and the division." I imagine how Gavrilov will laugh. I do not always have sad business with him.

The intercom hums for several minutes without stopping. Vasin requests a car for an hour, the head bookkeeper complains that there is no money in the account, one division chief asks to go to the dispensary, another asks to have an urgent letter signed. Well, this is small stuff.

Aleksandrov comes in. He sits down and sighs heavily:

"Well, I have received another letter of resignation. I simply do not know what to do, Sergey Ivanovich," sobbing notes can be heard in the voice of the division chief.

"Do you know what the major quality of a leader is?" I ask him. And I answer myself: "Optimism. Active optimism! Why the sour look? You must figure out the reasons for the dissatisfaction and eliminate them. But above all you yourself must pull yourself up and not be discouraged. You are the leader! Strength and confidence must exude from you, but you have such a dejected appearance that just looking at you would cause a person to resign."

"No, people are leaving because of their earnings," Aleksandrov mumbles.

I blow up:

"And why are they not leaving other divisions? No, that is not the problem. Your people see no future with you. The plan has not been fulfilled, there are not enough orders, problems of material incentives have not been solved, and the moral climate in the division is not very good... And you: Wages, wages ... It is a poor manager who begins with a search for objective factors. It is necessary to begin with subjective ones -- those about which we can do something. This is what I have to say to you: you must finally take the matter in hand or else let the division go completely to ruin. Travel around to the plants and get orders -- there is no end of work to do. Drop in to related organizations; they have experience in creating economic incentive funds.... Finally, take action!"

Aleksandrov bowed humbly and left. I am afraid that my monologue will not change anything...

Which Style Is Better?

Specialists in questions of management most often single out three styles of leadership: directive, collegial and nominal. I frequently think: which of these is preferable and toward which am I myself inclined?

Of course the most advantageous for the manager is the nominal. How good it would be to have qualified division chiefs who have initiative, and not to intervene in their decisions, but simply to coordinate their actions slightly.

A dream! ...

The most progressive, of course, is the collegial. As soon as there is a serious problem, gather all the chiefs in your office and let them discuss it. You yourself sit to the side like Kutuzov and listen. As soon as a coordinated decision begins to be "forged," take up your pencil, and that's it.

The most reprehensible one is the directive method. In the first place, you have to decide everything yourself (all you do is rack your brains); in the second place, this means you must be responsible for everything (all you do is put your head on the block), and in the third place, this method has a whole number of labels that leave a bad taste in your mouth: despotism, voluntarism, and so forth. And these same decisions, if they are made in public, are called collegial.

That is the way they line up!

At one time, when taking a position, I carefully weighed these methods of management. I immediately rejected the nominal method as fanatical. I did not like the directive method because it is unethical. But the collegial method appealed to me. (Just as in the story of the "Three Bears.") I tried this method and liked it: I held conferences, discussed questions, and listened to opinions... It became clear, in the first place, that this took a very long time, and, in the second place, most frequently it turned out that I made the decision myself anyway.

Finally I understood that there is no single formula. The truth, as always, lies somewhere in between. For every specific case and for every specific individual there should be a specific method. Some problems can be solved only collegially, and with some comrades one can only work directly...

With time I formed a certain stereotype: principal technical problems I resolve only collegially, and problems of incentives and punishment for associates -- only collegially, but at the same time the majority of operations issues are resolved directly ...

I am a little distracted. I press the button on the intercom:

"Katya, tell Yura to get a car ready and we shall go to the ministry."

"There is no car available, Sergey Ivanovich, Vasin has not returned yet."

"What do mean he has not returned? He asked for the car for an hour, and two hours have passed already! When he returns send him right to me. I'll tear him to pieces."

I can hear Katya's laughter. Humor is necessary; without it the manager is perceived by his employees as a container full of tiresome paragraphs.... And it is relaxing for me as well.

"Sergey Ivanovich," Katya looks in, "an artist has come to see you."

The artist is developing an emblem for our organization.

He had already done several dozen sketches, but I did not like any of them.

"Now we are organizing a brainstorm," I told him and called in the head engineer, the division chief Gavrilov and two other workers whose opinion I always take into account.

A heated discussion began. They agreed quickly on the basic detail of the future emblem -- this, of course, had to be an element of our product. But they argued a long time about the symbol for design labor: either a pencil, or a transporter, or a circular... But still they arrived at a unanimous opinion and soon the emblem was basically designed.

A brainstorming session is usually justified: all one need do is call in the right people and ignite a spark of enthusiasm in them.

At 4:00 p.m. there was a conference of administrative and management personnel. Sitting across from me were personnel workers, planners, bookkeepers, and supply workers -- my closest assistants.

"We have a personnel division," I begin, looking at their faces, "but there is no influx of personnel. There is a bookkeeping office, but there is no money in the account. There is a supply division, but there is no organization of office supplies ..."

For about 5 minutes I discuss the shortcomings of our services and the need to increase the responsibility and efficiency of the workers.

"And the most inadmissible thing," I conclude, "is the coarse and negligent attitude toward the workers. We administrative-management personnel must be not only leaders, but also servants of the collective, like deputies. Of course we cannot fulfill all the wishes of our workers, but everyone who comes to us must be assured that we want to help him and that we will spare no efforts to do this ..."

Then the representatives of the services speak.

"Of course we have many shortcomings," says Vasin, "but in general things are not so bad. Here in the neighboring scientific research institute the ceiling of the fourth floor has fallen in -- and they could not do anything for a half year. And ours had just barely begun to leak and in the same week we found a roofer and repaired the roof ..."

"And anyway, Sergey Ivanovich," says the chief of the personnel division, pursing his lips and offended, "a personnel worker should not engage in checking on discipline. This should be handled by the Komsomol guard, the people's controller, in the end ..."

I assiduously prove that she is wrong.

The head bookkeeper and the chief of the planning-production division discuss their difficulties...

They are all offended when they leave my office.

Still, it is not easy to combine good human relations with sufficient demandingness in work. As they say, friends are friends and work is work

At the end of the day there is a small incident. A worker comes in in tears and complains that the division chief will not give her an administrative leave and she has nobody with whom to leave her child.

In situations like these all of my female workers have a powerful ally. This is my wife. As soon as women come to me with requests like these I immediately recall the home life of my wife and I cannot refuse them. And they do not suspect whom they have to thank ...

#### "Patronage Assistance" and a Little About Speeches

Today I came to work earlier than usual: in the morning I had promised to look in on the chief from the association -- Mikhail Erikovich Dmitriyev. In the design bureau such days are called days of "patronage assistance."

I sat down and was looking at the mail when I heard a loud sound of doors opening loudly and then some cursing.

"G--- D---, They set a trap here," the chief scolds, pushing himself through the narrow opening in my double door.

"You are always griping, Mikhail Erikovich," I say, having greeted him, "it will shorten your life."

"I'll worry about my own life," he interrupts.

"Well, it is beginning to ..."

"Call in Andreyev with a draft of an order," says the boss.

I push the button of the intercom and call in Andreyev.

When he arrives, the boss looks at him for a long time with a peevish smile. Then he says:

"Read the draft of the order!"

Andreyev begins to read. The boss interrupts him with remarks.

This order has been in the process of composition for 3 years already.

Dmitriyev is not satisfied with the work of the association's capital construction division and, although this subdivision is not under his jurisdiction, he wants to bring order into this area of the work through our design bureau. He has thought about creating under us a group which, within the system of the scientific production association, would arrange the work for developing the capacities for renovation and technical re-equipment of production. It is clearly an administrative task, and therefore I am resisting it. And also I do not have enough personnel.

Dmitriyev, having noticed that I am "missing," interrupts his reading:

"Sergey Ivanovich, call Gavrilov in."

The boss bombards Gavrilov with questions:

"How is the testing machine? How is the polishing machine? Why is there no welding in the plant? Why have they not yet developed the technology for the new item?"

The questions spill out, sometimes leaving no time for an answer. Gavrilov holds his own honorably, and I help him from time to time. Then comes a question which should be answered by the boss: at one of our plants they are assembling new equipment which cannot be completely dispatched without a program of orders from another plant.

Dmitriyev skillfully gets around this question. Then the boss sends Gavrilov after some materials and again he listens to Andreyev. A couple of minutes later he asks me to call in another division chief -- Mikhaylov. He asks him how things are going with the new design.

"You have bedlam in your division," he reprimands Mikhaylov. "You yourself have absolutely no understanding of the issues. You are not only not qualified to be a division chief, but you are not even on a par with the head engineer...."

I try to cool the boss off before he goes too far.

Again he listens to Andreyev, interrupting him with questions, first for Gavrilov and then for Mikhaylov. Something like cross questioning.

In the second hour Dmitriyev finally says goodbye:

"Forgive me for intervening in your work," he says sarcastically.

I do not try to change his mind: of course he has put me off balance for the rest of the day...

Having had lunch and made my way through a bunch of current business, I sat down to complete my preparations for today's speech at the meeting.

I always take speeches seriously. I think that a manager's speech should always contain:

1. Interesting facts.
2. Criticism.
3. Optimism.

The subject of today's meeting is production discipline and labor productivity. I look at the points I have prepared the evening before:

1. Figures about labor resources and labor discipline.

The decline of the growth rate of labor productivity. Data from research. (In this part of the report the eyes of the listeners will glow with interest and they will ask old questions and submit new ones. I usually do not object when they interrupt me, and I answer questions right during the



course of the speech. It turns out to be very lively, and the main thing is that the listeners participate in the creative process.)

## 2. Labor productivity and the condition of labor discipline in the design bureau.

The issue of labor discipline is not a one-time campaign, but a constant task. The underloading of a number of subdivisions (a couple of concrete examples). The fault of the managers. Delays. Reduced demandingness of managers.

Absences from work and various duties on free days at vegetable bases and sovkhozes. (This is a serious problem. We give leaves of a day for a day, while some organizations allow two days for a day off. Our coworkers are grumbling. Moreover, certain institutions assign business trips for their workers who are going to the sovkhoz, but we do not wish to have violations -- and again dissatisfaction.)

Production discipline. In the quarterly report one could hear the words: "The collective has successfully completed..." It would be more correct to say: "With great difficulty we have completed..." This is the fault of the irresponsible attitude toward business on the part of Comrades Gavrilov, Mikhaylov ... (I can see clearly how deeply Gavrilov will blush and how low Mikhaylov will bow his head.)

## 3. Methods of increasing labor productivity and production discipline.

Coercion and sanctions. Intolerance of loafers and violators of discipline: fines, deprivation of bonuses, firing under the article ... Differentiation of bonuses and incentives. Our slogan: do everything for good workers!

## 4. The latest achievements and the prospects of the design bureau. (This part of the speech should fill the hearts of the workers with pride in their organization and confidence in the correctness of the management policy, in other words -- it should inspire confidence in their future.)

I attentively look over the subjects, concretize them, and add several ironic remarks. Then, having noted the time, I run through the entire speech almost aloud. Fifteen minutes. Normal. The speech must be delivered almost without looking at the paper -- this is valued very highly by the listeners.

Well, now I am ready ...

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## PRACTICE OF CEMA MANAGEMENT ORGANIZATIONS EXAMINED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 84 pp 171-184

[Article by M. A. Deryabin, candidate of economic sciences, Institute of Economics of the World Socialist System of the USSR Academy of Sciences (Moscow): "Independence and Responsibility of Management Organizations"]

[Text] The Institute of Economics of the World Socialist System (IEMSS) held a round-table discussion on questions of expanding the independence of economic organizations. The meeting was conducted by a member of the magazine's editorial board, Doctor of Economic Sciences, Prof. R. N. Yevstigneyev, a division chief of the IEMSS. Participants in the discussion tried to interpret the wealth of experience of the CEMA countries, taking into account the problems that face our country's economy.

Questions of the independence of economic organizations have long bothered scholars and practical workers. Suffice it to recall the turbulent debates of the 1960's revolving around problems of the plan and the market, which attended the economic reforms in the Soviet Union and other CEMA countries. And although at that time conditions were still not ripe for essential changes in the economic mechanism, the need for which was indicated during the course of the theoretical discussions, it was quite clear that without significant improvement in the system of interrelations between central economic management and the enterprises and expansion of their independence in decision making it would be impossible to increase the effectiveness of public production. V. I. Lenin considered expansion of the independence and initiative of each large enterprise in disposing of financial means and material resources to be one of the most important conditions for successful socialist management.\*

Independence of economic organizations is especially crucial when changing over to the intensive type of expanded reproduction. The November (1982) Plenum of the CPSU Central Committee emphasized that the time has come to take a practical approach to expanding the independence of the associations and enterprises, kolkhozes and sovkhozes. Implementing the decisions of the

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\*See: Lenin, V. I. "Poln. sobr. soch." [Collected Works], Vol 43, p 334.

Plenum, in July 1983 we adopted the decree, "On Additional Measures for Expanding the Rights of Industrial Production Associations (Enterprises) in Planning and Economic Activity and for Increasing Their Responsibility for the Results of Their Work."

### "Steering Wheel" and "Engine"

The fairly widespread viewpoint that expansion of the independence of enterprises undermines the centralized planning basis in management of the economy is fully refuted by the experience of management in all countries of socialism. There is an increasingly obvious need to strengthen centralized planning and improve its forms and methods along with expansion of the economic independence of the enterprises. Both elements of democratic centralism should be developed in a dialectical unity, and an unjustified distortion in one direction or the other will inevitably lead to insufficient controllability of the economy and to large losses in the national economy. This idea came up in many of the speeches (Academician O. T. Bogomolov, director of the Institute of Economics of the World Socialist System of the USSR Academy of Sciences; Doctor of Economic Sciences V. G. Starodubrovskiy, Institute of Economics of the USSR Academy of Sciences; Doctor of Economic Sciences Ye. G. Yasin, TsEMI of the USSR Academy of Sciences). In the figurative terms of one of the participants in the discussion, the management initiative, the activity of the labor collectives, is the "engine" of the socialist economy, while centrally planned management is its "steering wheel." The most impressive steering wheel loses its meaning when its motor is not powerful, and without the steering wheel the ship cannot be controlled. It is obvious that the work of the engine and the steering wheel must be closely coordinated.

Every manager knows that these are not simply words. For it is no secret that in many directive planning assignments, the strictest control from above and detailed instructions, the enterprises sometimes act not only outside the framework of the nationwide assignments, but even directly counter to state interests. Here is where one finds the notorious fulfillment and overfulfillment of the plan as a result of artificially inflated figures, uncontrolled growth of above-normative supplies of raw materials, processed materials and unutilized equipment which give rise to artificial shortages, hidden reserves of labor force when there is an overall shortage of it, and clever manipulations of the assortment and prices which make it possible without any special effort to increase profit and receive bonuses (Doctor of Economic Sciences I. N. Buzdalov, IEMSS of the USSR Academy of Sciences).

For example, according to data of the USSR Central Statistical Administration, the volumes of stocks and the "stock capacity" created in industry, agriculture and construction of the global social product and the national income in 1976-1980 increased at rates that considerably surpassed the growth rates of the social product and the national income themselves. This is especially typical of construction: during the 5 years the stocks in this branch increased by 76 percent, and their volume in 1980 exceeded the volume of national income created in construction 1.2-fold (A. N. Sukhoruchenko, candidate of economic sciences, Scientific Research Institute of Material and

Technical Supply). With strict control of the numbers and structure of administrative-management personnel at the enterprises with the help of annual directive assignments for reducing administrative-management personnel in actual economic practice, these assignments, as was noted by V. I. Smirnov, candidate of economic sciences (NIEI of the USSR Gosplan), "are fulfilled without being fulfilled." This situation has been criticized repeatedly in the press both in our country and in the sister socialist countries.

But this is still not the main thing.

Of course it is necessary to observe planning discipline, to hold violators of it strictly accountable, and to supervise the observance of the norms of socialist management. But our main efforts should be directed toward the kind of combination of the work of the "steering wheel" and the "engine" which will eliminate elements of uncontrollability, the divergence of the desired, normatively regulated course of economic processes which is reinforced in provisions and the actual one. This divergence is explained not only by shortcomings in the observance of planning, contractual and financial discipline.

The changeover of the economy to mainly an intensive path of development requires different interrelations between centralized economic management and the activity of the enterprises. Intensification presupposes coordinated, balanced development of all branches and kinds of production. While the macroproportions of the national economy are relatively stable, active positive changes are constantly taking place in the technical development, material-production proportions and growth rates of individual units of the economy.

World experience shows that the macroproportions which are typical of developed industrial countries are stable for a long period of time. Changes are slow in the interrelations between subdivisions I and II and between material expenditures and the conventional net output in the global social product. The basis of this stability lies in dynamism and adaptability to the rapidly changing conditions of the microlevel of the economy, especially under the conditions of the scientific and technical revolution.

Since disproportions appearing at the lower levels of management seem to "fade" in the consolidated indicators, and it is increasingly difficult to exert a centralized influence on the closely interconnected and dynamically changing production and economic structures, there is a greater need to shift many management functions precisely to these lower management levels, that is, to expand the independence and responsibility of management organizations (M. I. Gel'vanovskiy, candidate of economic sciences, IMEiMO of the USSR Academy of Sciences).

#### Not Subordination, But Partnership

But there is an immense distance from theoretical recognition of the need to expand the independence of economic organizations and the realization of this expansion in practice. Delay here is truly "death-dealing." Infringement on

independence under modern conditions ends up uncontrolled, unmanaged growth of it, which contradicts national economic interests. This growth cannot be held back or directed into the necessary channels even by the most severe measures (Ye. G. Yasin; A. D. Barskiy, candidate of economic sciences, TsEMI of the USSR Academy of Sciences). On the other hand, the complexity of the problem and its dependency on a multitude of economic, social and political factors and the national peculiarities of the economic mechanisms force us to be cautious in choosing practical solutions.

The slow restructuring of the system of management of the Soviet economy is frequently explained by the immense scale of it. Sister countries proceed toward the expansion of the independence of management organizations more decisively, apparently because of their smaller scale and their greater ability to mentally grasp their entire economies. But it would seem that in smaller countries it is simpler to schedule assignments for the various enterprises. But in fact this simplicity is only external, since concrete management conditions are extremely diverse, even with the smallest scale of management. They cannot be fully taken into account from above either (from the speech of I. N. Buzdalov).

The type of interaction between centralized state management agencies and economic organizations which has taken form in the countries of the community can be called a transition from relations of subordination to relations of cooperation and partnership, which correspond more fully to the scale and complexity of modern socio-economic tasks. Indeed, further development and improvement of both sides of democratic centralism are possible only when the enterprise acts as an equal partner with state management agencies, and a business dialogue is conducted between it and the branch ministry, Gosplan and Ministry of Finance concerning concrete methods of achieving the goals that have been earmarked. The experience of the CEMA countries reveals the necessary conditions and the main areas for realization in economic practice of partnership relations between centralized management agencies and economic organizations. The specific paths depend both on national peculiarities and on the specific features of the branches, the international situation and so forth. Despite the diversity of these paths, one can consider two models of relations between the center and the economic organizations to be completely developed, and these are most clearly manifested in Hungary and the GDR.

Since the 1960's Hungary has concentrated its main attention on realizing the goals of the plan with the help of a system of economic regulators which is a constituent part of the national economic plan. The economic regulators motivate the enterprises to act in the directions envisioned by the plan, in keeping with the overall national economic interests, and to find independently the most efficient ways and means of achieving the planned goals. Among countries in whose mechanism economic levers prevail the participants in the round-table discussion included Bulgaria and Poland (according to the nature of the laws and other normative acts adopted by the parliament) along with Hungary, and among countries where direct methods of economic guidance prevail they included the GDR, Czechoslovakia and Romania. Additionally, it was noted in the speeches that this kind of division is arbitrary and in no case means an opposition or a preference for economic

mechanisms of certain countries with an underestimation of those of others (V. I. Smirnov; P. I. Kuligin and G. V. Aristov, candidates of economic sciences, IEMSS of the USSR Academy of Sciences; N. V. Vladova, candidate of economic sciences, NIITrud.).

Since the end of the 1970's and especially since the beginning of the 1980's, within the framework of both approaches there has been an active search for possibilities of arranging effective interrelations between economic organizations and the center. The following tendencies have been traced.

There is more real participation of economic organizations in the development of national economic plans. Both the center and the enterprises are interested in cooperation, mutual transfer of information and consultation. The substantiation of the national economic plan and thus the success of its implementation depend essentially on how correctly it takes into account the actual possibilities, demands, intentions and interconnections among economic organizations. On the other hand, economic organizations are interested in making sure that this plan not only is based on a correct idea of their real capabilities, but, in turn, gives them a clear, scientifically substantiated idea of the overall socio-economic strategy and the position of each economic organization in it. A greater role is played by preplanning work and substantiation of the most important goals and proportions of the national economic plan.

In Hungary the enterprises draw up their plans independently on the basis of information concerning the tasks of the national economy which is received from planning agencies beforehand. Through consultations they coordinate their planning developments with those of the ministries and departments. When formulating the production program Hungarian enterprises proceed from a "portfolio of orders," that is, agreements for the delivery of products to the consumers. The plans formed by the enterprises are taken into account when drawing up the national economic plan.

The economic agreement serves to a considerable degree as a basis for developing national economic plans and plans for economic organizations in Bulgaria as well.

In the GDR the idea of partnership is coordinated with the work of combines which are recognized as the basic unit of the national economy.\*In industry, construction, transportation and communications in the republic there are now 157 combines which employ about 3 million workers. Having a great production and scientific-technical potential, a large part of the combines in the GDR actually determine the course of reproduction not only in the branch, but also in the entire national economy. Therefore joint resolution, which is coordinated with agencies for centralized economic guidance, of problems related to scientific and technical development, the structure of labor resources, capital investments and the development of the production

See: "Kollektivnyy opyt sovershenstvovaniya upravleniya sotsialisticheskoy ekonomikoy" [Collective Experience in Improving the Management of the Socialist Economy], Moscow, "Ekonomika", 1983, pp 99-106.

structure and the division of labor in the combines is a necessary prerequisite for the development and realization of the national economic strategy. Beginning in 1981 the national economic plan of the GDR has been broken down according to combines. Representatives of the combines and large enterprises participate in centralized preparation of long-range ideas and other preplanning documents (I. Fridel' and B. Looze, candidates of economic sciences, International Scientific Research Institute of Management Problems).

In the GDR combines perform important balance functions by coordinating their own capabilities and demands with the needs and resources of the national economy even during the course of development of the plan. Since the combines are fully responsible for satisfying the country's internal needs and the needs for exporting certain kinds of products, they must have an adequate field for maneuvering. As before, the assignments of the state plan are sent directly to the combines and enterprises. The numerous mandatory central indicators do not hamper their initiative too much because the policy for developing these plans whereby these indicators are preliminarily well substantiated by the combines themselves (R. N. Yevstigneyev, doctor of economic sciences, IEMSS of the USSR Academy of Sciences).

#### Independence -- Not an Independent Problem

Under what conditions should the economic independence of the enterprises be developed and strengthened? Independence is not a set, constant quantity, and its realization depends both on the overall level and the peculiarities of socio-economic development and on the nature and logic of the economic mechanism of one country or another. In the discussion they indicated various approaches to understanding the conditions necessary for the development of the independence of the enterprises.

The majority of participants in the round-table discussion were inclined toward a one-time coordinated solution to problems of balanced, proportional development of the national economy and improvement of the economic mechanism. Such an approach, in their opinion, is the most realistic under modern conditions. But there is also another point of view: first it is necessary to achieve balance of an efficient economy, and then one should introduce an economic mechanism that is based on expansion of economic independence. Otherwise (as was the case in Poland) there is the possibility of serious socio-political repercussions (G. V. Aristov and M. A. Usiyevich, candidates of economic sciences, IEMSS of the USSR Academy of Sciences).

As for the concrete areas of development of the economic mechanism, all participants in the discussion unanimously think that it is expedient to approach gradually the unified conditions for the functioning of economic organizations: unified norms for payments into the budget, tax levies and the investment policy, unified conditions for the formation of autonomous financing funds, criteria for evaluating the economic mechanism and so forth. Still such a unity of norms should be envisioned only as a tendency, a desired result of prolonged and complicated work for improving the economic mechanism. Under modern conditions, with the extensive and not always justified differentiation of types, forms and scales of the main unit of the national

economy, a unification of norms in actual economic practice inevitably ends up to be inefficient differentiation which is unjustified from the standpoint national economic interests (S. Ye. Kementser, doctor of economic sciences, International Scientific Research Institute of Management Problems). So in many countries, large enterprises which produce all or the majority of some particular kind of product actually influence management conditions on the basis of local and not statewide interests. Unified norms must be introduced gradually, in stages: from differentiated to unified, initially within the framework of individual groups of economic organizations and then to unified norms on the scale of the entire national economy (N. V. Vladova). The experience of the countries of socialism shows that with certain variants and in specific forms the process is proceeding precisely in this direction. For example, the legislative acts concerning price setting in a number of countries envision special measures against manipulation through prices on the part of enterprises that are monopolies (Bulgaria, Hungary, Poland and Czechoslovakia).

In the CEMA countries there are still great differences among enterprises in terms of such indicators as profitability, labor productivity, the ratio between material incentive funds and the wage fund, and between the funds for development of production and production capital. In Hungary, for example, the profit received by the enterprises was differentiated considerably more than was necessary. As much as 80 percent of it depended not on the efforts of the enterprises themselves, but on various financial benefits.

Countries of the socialist community are striving to utilize special measures to equalize the initial conditions for management and to create for all economic organizations unified conditions for the formation of expenditures and the results of their activity, that is, equal rights and chances for development and the receipt of income. These measures include introducing payments for resources, rent deductions, turnover tax, and special payments or taxes for regulating profitability, incomes and wage funds. Thus in Czechoslovakia for a certain amount of time the enterprises made special deposits into the state budget -- the so-called "return of value of fixed capital." A similar payment, but in another form -- the "return of funds received for financing capital investments (it amounts to up to 10 percent of the planned profit) -- is applied in Romania.

Independence of economic organizations presupposes above all the right to determine the wage fund independently and to establish the average earnings of the workers. Bulgaria's experience is interesting. There they introduced the result-residual principle for the formation of the wage fund. From the realized gross income which remains after subtracting material expenditures from the overall income they make compulsory payments to the state and the funds of the higher organizations, deductions into autonomous financing funds according to established normatives and so forth. The remaining part of the gross income (result-residual amount) constitutes the wage fund. But independence in its utilization is limited by the maximum level of average wages which is planned centrally for 5 years. The possible to excessive growth of wages as compared to the rates envisioned by the national economic plan is held back by the system for imposing taxes (from the first percentage



point of increase in average wages) ( Kh. Kirov, candidate of economic sciences, International Scientific Research Institute of Management Problems).

Restructuring of the channels of communication between enterprises and the budget has a direct effect on the formation of wage funds for economic organizations, and especially on the incentive funds: changes in the system of tax deductions from profit (under the current five-year plan such changes took place in the majority of European CEMA countries), limitations on budget assistance to the enterprises and financial support only for those which have low profitability or which have sustained losses because of objective reasons or whose products are of special national economic significance. In Hungary for several years now that has been a special policy for increased supervision over enterprises that are not operating efficiently enough. Supervisory commissions have been created for enterprises. They comprehensively analyze their activity and develop recommendations for eliminating the losses that are discovered.

Thus all of the CEMA countries are increasingly realizing a tendency toward agreed-upon, mutually coordinated improvement of all elements of the economic mechanism. Since 1983 Czechoslovakia has been conducting an experiment for increasing the effectiveness of scientific and technical development, capital construction and foreign trade, which encompasses all large production and economic associations of several branches of industry. As was noted in the discussion, measures for expanding the operational-economic independence of the enterprises are coordinated with a significant increase in their responsibility for satisfying the demands of the society for the products and services they produce (R. L. Volodarskaya, IEMSS of the USSR Academy of Sciences). Expansion of the opportunities of the enterprises to form and utilize their own financial base is coordinated with a simultaneous increase in the significance of planning indicators which reflect the technical and economic level of production (share of profit from raising the technical level of the items, indicators of proportional consumption of fuel and energy, and so forth). The system of bonuses depends on the fulfillment of the terms of these indicators. Investment funds of economic organizations are consolidated as a result of merging previous funds for development and construction into a unified fund for capital construction. This policy has now been extended to all economic organizations of the Czechoslovakian Ministry of General Machine Building.

Many participants in the round-table discussion noted in particular that the various difficulties in the work of enterprises and associations are explained by the still existing separation of their economic, legal, sociopsychological and political aspects of their activity, and frequently even a direct lack of coordination of the effect of economic levers, normative-legal regulation, and areas of propaganda and political-educational work (M. P. Lebedev, candidate of jurisprudence, IEMSS of the USSR Academy of Sciences). In particular, it was noted that counterplanning did not work in several CEMA countries (for example, the GDR) because of the different goals of production and economic planning and the organization of counterplanning (Ye. L. Sidel'nikov, IEMSS of the USSR Academy of Sciences).

Several participants in the discussion (I. N. Buzdalov, M. N. Usiyevich and A. N. Sukhoruchenko) expressed the idea that in practice it is expedient to expand the independence of organizations first in agriculture and the agro-industrial complex as a whole, whose specific features are good for this.

In conclusion let us note that while recognizing the need for and the timeliness of a careful study of the management experience of the sister countries, participants in the round-table discussion emphasized the need to give a lot of consideration to the possibility of utilizing this experience in the USSR. It is wrong simply to borrow any individual measures, even if they have proved to be good ones in one country or another, and "transplant" them to our soil. Constant attention should be given not so much to particular concrete measures as to the logic itself which is used when making economic decisions which ensue from particular socio-economic conditions.

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CSO: 1820/121

## INNOVATIONS IN AMERICAN BUSINESS REPORTED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 84 pp 185-195

[Article by V. P. Averchev and Yu. A. Ushanov, candidate of economic sciences, Institute of the United States and Canada of the USSR Academy of Sciences (Moscow): "Management: Innovations in American Corporations"]

[Text] Among the most important innovations in the management of American companies in the 1970's is the emergence of strategic management systems. With the help of organizational means of development and implementation of the strategy, company management is trying to provide for concentration of resources in productions which will provide for the greatest increase in profit in the future. The creation of the corresponding services, the development of a network of consultative firms for strategic management, and the appearance of numerous theoretical and applied concepts in this area are comparable in their scope to the "administrative automation boom" of the 1960's.

These processes have taken place against the background of repeated price increases, deepening structural disproportions and differences in the conditions for reproduction in various branches, a weakening of the positions of American capital in the world capitalist economy, high rates of inflation and stagnation in many branches of the national economy and so forth. This has led to a disorientation of the investment processes in the U. S. economy and the formation of long-term tendencies toward decline of the growth rates of labor productivity and reduction of the profit norms. It was openly recognized that a considerable part of the responsibility lies not only with the random play of market forces, but also the economic strategy and the policy which for a long time was adhered to by the main centers of economic power in the system of state monopolistic capitalism in the United States. It was precisely the crisis of the mechanism for regulating social reproduction that served as the impetus for a revision of the strategy itself and the mechanisms for its development and implementation both at the government level and at the level of individual monopolies.

During the postwar period corporations in the United States have been transformed into multibranch complexes which are capable of assimilating the

output of various kinds of products and penetrating new sales markets. In parallel there has been a changeover to decentralized structures of management, in which the production units within the corporation have been created according to the model of independent firms, so that insofar as it is possible their products will have analogs on the sales market.\*

This eliminated artificial organizational barriers to the development of specialization and cooperation in economic activity. At the same time unified indicators were introduced for evaluating the work of divisions -- the level of profitability, sales volume, share of the market and so forth. This kind of restructuring was intended to increase the profit of the corporations as a whole as a result of greater personal enterprisingness on the part of the managers of the main unit and more complete accounting for market conditions.

Along with the growth of the economic independence of the divisions, the development of corporations is being increasingly impeded by the inertia of the production and economic structure. With a high concentration of power, the higher managers when developing a strategy end up being actually dependent on information and suggestions that come from "below" -- from the managers of the divisions. The possibilities of independently checking and correcting these data and predictions through the forces of the central corporation staff are extremely limited. Staff services have influenced decision making less than managers of production and economic subdivisions. Therefore a considerable share of the corporation's financial funds have been almost automatically distributed among existing subdivisions without an evaluation of their prospects. The crises of the 1970's alone and also the shocks dealt to the pocketbooks and self-esteem of American enterprises by their Japanese and West European competitors have forced the managers of American corporations to immerse themselves completely in drawing up a strategy for development and arranging a mechanism for its introduction.

Strategic planning, which became widespread during the second half of the 1960's and the 1970's, was the first administrative innovation in the development and realization of the strategy of American corporations. Strategic planning is the process of forming long-term plans and policies which change the nature and direction of the activity of the firm. The most significant aspect of this is the evaluation of the expediency of individual directions of economic activity which depends not so much on current effectiveness as on the results in the future. When evaluating the strong and weak aspects, one raises the question: "What position does this production occupy in long-term development?"

Then the existing directions of economic activity are evaluated on a par with new plans -- be it the creation or acquisition of new productions. And the resources are distributed not according to current results of the subdivisions, but according to the position they occupy in the strategic development of the corporation. Profitability, for example, serves as a control criterion for current activity, but a high level of it is not a justification for allotting additional resources; the leading one here is the corporation's strategy in the given segment of the market -- in the given branch or subbranch. In some sense an attempt is made to construct a

\*For more detail on such management structures see: Yevenko, L.I. "Reconstruction of Organizational Structures of Large Industrial Corporations in the U.S.", SShA: EKONOMIKA, POLITIKA, IDEOLOGIYA, 1981, No 7.

mechanism which would preclude production growth from what has been achieved, and thus inertia of reproduction and extrapolation of the existing production and economic structure for the future.

In general form the development of strategic plans presupposes:

the formulation of strategic goals;

analysis of the strong and weak points of the firm's activity;

evaluation of existing and possible future directions for economic activity;

analysis of the external environment and its influence on the functioning of the company;

determination of alternative sets of production and economic activity;

selection of the strategy;

drawing up of the annual budget of the firm as a whole, and its functional and economic centers.

The Management of the Armco Steel Co., for example, for 2 years beginning in 1976, in conjunction with the consulting firm Boston Consulting Group, analyzed the firm's strong and weak activities and constructed proposals for the period up to 1985 concerning various aspects of the external environment that are essential for the steel smelting industry in the United States. They predicted the need for capital investments, expenditures on environmental protection, actions of the government and competitors, the controlled share of the market and so forth. As a result, four variants for the development of the corporation were drawn up. The final selection was made by the higher management, and the new strategy was sharply different from the strategy of the 1960's, when the main goal was to increase production volumes in tons. In the new strategy they relied on reducing production expenditures, increasing labor productivity, and specializing in certain products for whose production Armco has unique capabilities in the branch. The approved strategy was developed into concrete and detailed plans for each economic and functional subdivision of the firm, and the annual budgets were drawn up on the basis of these. The profits of the corporation increased sharply for the next 3 years.

The general procedure for strategic planning is certainly not realized in all American corporations as it is in Armco Steel. Frequently the selection of a strategy does not involve drawing up an annual budget for the corporation and its subdivisions. The strategic plan only indirectly influences the activity of the firm, and its force is determined to a considerable degree by the personal attitude of the higher manager to the practice of strategic management. This was sufficient to realize the strategy during the favorable years of the 1960's, but it was clearly inadequate for the 1970's. The shortcomings were clearly reflected in the mechanism for developing the plan and, the main thing, its realization, including the break between strategic planning and the economic managers, and the orientation of production toward

current goals and narrow "local" interests, to the detriment of the fulfillment of long-term corporation-wide tasks.

In many companies performance evaluation, control, accountability and stimulation were arranged previously mainly from positions of current development: profit, sales volume, output-capital ratio, and so forth. As a result, the division managers were interested in maximizing current results without taking into account the long-term consequences of the decisions that were made. Objectively, there is less motivation to modernize production capacities (if this has not led to an immediate effect) or to carry out long-term programs that involve risk. There has been a tendency to manipulate prices and thus improve value indicators. In many companies there has been no effective control over the expenditure of funds allotted for achieving strategic goals. As a result, these funds are sometimes taken away to be used for measures which improve current results, and time periods have been prolonged for the assimilation of principally new products, the updating of technology, the development of sales channels, and so forth.

Strategic planning systems could not fully overcome the inertia in the development of American corporations in the 1970's, but the very fact of the systematic work and the accumulation of information about possible gains and losses revealed and brought to the surface the shortcomings in the distribution of resources.

The development of strategic plans provided incentives for additional innovations in the system of management. During the past 10-15 years the utilization of models of strategic development has increased. They are used by about 2,000 American firms, or 73 percent of the firms that were investigated.

The financial model of a firm is used when analyzing the firm's surroundings, evaluating the financial consequences of the adoption of various strategies for the distribution of capital investments, merging and acquisitions, management of monetary flows and so forth. From a financial model one receives information about incomes, sources of funds and their utilization, balance information and other financial documents which are usually used by the firm's higher management when adopting strategic decisions. As a minimum, the financial model results in information about profit and losses. The prediction of the sales volume is obtained from models for management of sales, and the amount of production expenditures on alternative levels of output of products is determined with the help of the division's production model.

The main purpose of sales management models is the prediction of the sales volume and the share of the market for the firm's main products and groups of products. These data are used as input variables for financial and production models of strategic management centers (SKhTs) and are obtained mainly with the help of econometric models of the corporation. From questioning 1,700 economists (United States), one finds that 70 percent of the company economists in their predictions use or intend to use the econometric model of the corporation. Such a large scope of econometric calculations within the

companies is explained to a certain degree by the mistakes that were made by the national prediction services when predicting the development of the U.S. economic situation in the 1970's. Ever since then company representatives have wanted to do their own calculations.

Production models of the SKhTs are used to determine the production expenditures for the manufacture of products in a volume which corresponds to the market demand and is calculated on the basis of a sales management model. All three kinds of models have a fairly simple mathematical structure. Only in certain models of strategic development do they use methods of mathematical programming in order to minimize the expenditure of resources on the production of products.

Let us take a look at the experience of the Northwest Industries company. The corporation consists of nine production divisions. The long-range plan was first developed in 1968 and the mathematical model for strategic development was introduced in 1977. For eight of the divisions they created production, sales and financial models, which were joined together into a unified model for the corporation. In each of the models there are approximately 30 administrations. The models are used mainly for evaluating the variants of the strategic development of the divisions for 4 years in the future. The results of the calculations are used directly by the firm's higher management. In 1980 two divisions of the company presented long term plans for their development which were based on the favorable tendencies of the 1970's and the prerequisite of further growth of their product sales. But the calculations according to the model showed that under the crisis conditions which were most probable for the beginning of the 1980's, it was incorrect to make this assumption and there was some question about the profitability of the divisions. The president of Northwest Industries, B. Heineman, basing his decision on the results of the modelling, rejected the initial variants of the long-term development of these two divisions.

The situation in Northwest Industries is more the exception than the rule, and one can hardly expect the higher management of American companies to work directly with computers in the near future, although the interest in the results of modelling is fairly great. According to data from an investigation of 200 American companies, 30 percent of the higher managers stated that they were very interested in the results of modelling and 60 percent of them were simply interested in the entire process.

Graphic models of the distribution of capital investments exerted an even greater influence on the practice of strategy development. Of the 282 large American companies that were investigated, 63 percent form their own strategy based on similar models. The main reason for such rapid introduction of these is that they make it possible to conduct the evaluation of the production and economic structure of the corporation and determine the directions for its changes in a simple, visual and comprehensible form.

We know of three graphic models for the distribution of capital investments which have been developed and publicized by the consultation firms Boston Consulting Group, Mack Kinsey and Arthur D. Little. The task of these models

is, in the first place, to classify the directions for the economic development of the corporation and, in the second place, on the basis of this classification, to develop the strategy for the distribution of capital investments in various kinds of economic activity with a guarantee of high profit in the present and the future. The most widely used model is that of Boston Consulting Group in which all areas of the corporation's economic activity are divided into four categories, which provide for

a high growth rate and a large share of the market;

a low growth rate and a large share of the market;

a high growth rate and a small share of the market;

a low growth rate and a low effectiveness.

A special strategy is proposed for each of these kinds of economic activity.

In graphic models the analysis of the production and economic structure of the corporation is conducted in terms of individual areas which are increasingly being called strategic economic units. They represent a totality of all the firm's resources which are being used for the production and sales of a specific product. In medium-sized and small firms each specific product is produced and sold, as a rule, in a single organizational subdivision (most frequently in the division). In this case the development and realization of the strategy turns out to be coordinated with the organizational structure.

Large companies are another matter. In General Electric, for example, the production and sales of household refrigerators are distributed among three divisions. Therefore in large firms, in order to develop and implement the strategy, it is necessary to have an administrative structure which does not coincide with the organizational structure. By the beginning of the 1980's elements of special strategic management structures had been introduced in approximately 20 percent of the 500 largest companies.

These special management structures, along with the procedures for drawing up the strategic plan for the company's development which were described above, comprise a system of strategic management which envisions:

the allotment of corporation resources for strategic goals, regardless of the actual structure of the management of production and economic activity;

the creation of guidance centers for each strategic goal;

evaluation and stimulation of production subdivisions and their managers according to the degree of their achievement of strategic goals.

In parallel they retain current control over profitability, sales volumes, the level of outlays, and so forth. This management system coexists with the strategic management and serves mainly to maximize current profit.



The main unit of the system of strategic management is the strategic management center (SKhTs). It includes production subdivisions of the corporation according to the following indicators: common sales markets, the same type of products and their interchangeability, completeness of resources for their development, production and sales, the existence of competitors who are comparable in terms of profile and potential. Guidance of the strategic management center is the responsibility of the manager of the level to which all subdivisions included in the SKhTs are subordinate. The manager is responsible both for the development and for the implementation of the strategic plan for his SKhTs. The latter can be at various levels of management, and can include entire subbranches, groups of productions or the production of individual goods. All of them are given an equal status in the system of strategic management, regardless of the scale of their activity, and thus they are constantly in the field of vision of the higher management.

The totality of all SKhTs's along with the division for strategic development at the highest level form the organizational structure for strategic management. It is based on the company's strategic goals, in other words, not on the present, but on the future structure of economic activity, not on the available, but on the created production, scientific and sales potential of the corporation for which resources are allotted under a special policy. All this necessarily leads to deviations in the organizational structure of strategic management from the existing policy of management of current production activity. The number of SKhTs's is considerably less than the number of divisions of the main production unit of the American corporation. Thus in the Westinghouse Electric company 110 divisions are combined into 37 SKhTs's. The managers of strategic economic centers are granted additional authority, which makes it possible for them to enlist for the achievement of strategic goals the resources of those subdivisions which are not under their direct jurisdiction. In the Texas Instruments company, for example, the sections of the strategic plan which are called "tactical programs of action," which are approved for the forthcoming year, determine the responsible officials irrespective of their positions in the organizational structure. For those strategic programs which involve the creation of products and productions which are principally new for the corporation, it is possible to appoint managers who have been released and allot the necessary resources. This form is especially widespread in the management of scientific and technical innovations.

One more important sign of strategic management is comprised of the indicators for evaluating the activity of the SKhTs and the earmarked policy for their stimulation. In addition to the indicators of the evaluation of current activity which are mandatory for all (profit, sales volume, output-capital ratio and so forth), indicators of the dynamics of the achievement of long-term goals are also established for them: stages of the development and assimilation of new products, growth of production capacities, growth of sales volumes, and so forth. The system of bonuses for the managers is arranged correspondingly. For example, in the General Electric corporation the managers of the SKhTs's are awarded bonuses according to the following system: 48 percent for fulfillment of the long-range plan, 40 percent for current results, and 12 percent for additional criteria.

This article has given a certain collective image of the mechanism for the development and implementation of strategy. In practice, the achievements of American companies are more modest. The number of administrative innovations is also more limited. We are speaking more about tendencies than about established practice. But the interest in this both in the United States itself and among its West European and Japanese competitors is extremely great. The appearance of strategic management corresponds to the objective needs of capitalism in the new stage of its development. Individual capital utilizes these innovations for increasing property mobility under the conditions of increased instability of the capitalist system of production.

The strategy of American companies is oriented toward internationalization of domestic sales markets, stable profit and protection from competitors. Under the conditions of capitalism it is unthinkable to include among the goals of strategic planning a reduction of unemployment, a higher standard of living and so forth.

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## VARIOUS NEW BOOKS ON ECONOMIC PREDICTIONS REVIEWED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 84 pp 196-202

[Article by A. P. Leont'yev, candidate of economic sciences (Novosibirsk): "Global Predictions of Bourgeois Economists: Catastrophe or Flourishing?"]

[Text] The intensification of international economic ties and the elevation of a number of tendencies and problems from a national or regional scale to the world level have increased the need for global predictions. Bourgeois economists who are concerned about the future of their countries are especially active in carrying out special orders.

In the analyses and predictions of bourgeois economists of a liberal persuasion certain objective features of the modern world economy have been recognized: the scale of real socialism, the crucial nature of internal contradictions of capitalism, the growth of its military expenditures, the gravity of the energy, raw-material, food and ecological problems, and the complexity of international currency, trade and investment ties. This explains the interest of Soviet economists in the "Roman Club" -- an international association for studying global problems.

The works of specialists who study the condition and prospects for current development of the world economy have helped to gain a more concrete understanding of many crucial problems of modernity. The threat of thermonuclear war, pollution of the environment, the danger of negative changes in the genetic code and psyche of man, the increased consumption of energy, raw materials and foodstuffs -- these problems have assumed a truly global nature and require solutions on a global scale.\* The study of these problems and the development of measures to solve them correspond to the highest interests of mankind and constitute a necessary condition for preserving the life of man on earth.

See Zagladin, V. and Frolov, I., "Global Problems and the Future of Mankind," KOMMUNIST, 1979, No 7, p 95.

In addition to this, the global predictions of bourgeois economists reflect their class interest in protecting capitalism. When analyzing the specific tendencies of the capitalist system of management, they try to speak about the historical perspectives of all mankind. Behind the predictions of imminent catastrophes one can see a fear for the destiny of capitalism in its strongest citadels, and behind the promises of distant flourishing is the phantom hope for the stability of capitalism and its predominance or at least its survival.

Peace and socialism are the best conditions for a radical solution to global problems. Progressive forces acting for peace and socialism are capable of leading the world economy along completely new paths which have not been envisioned in a single one of the bourgeois predictions.

A critical survey of bourgeois predictions of the world economy published in the 1970's was provided by V. V. Motylev, doctor of economic sciences, in his book "Prorochestva budushchego" [Prophecies of the Future] (Moscow, Politizdat, 1983). What is the main content of the aforementioned predictions? Which influences of objective tendencies and possibilities are omitted by bourgeois economists? The author gives a detailed answer to these questions. Let us turn to the materials of the book by V. V. Motylev.

1968. The "Roman Club" is created -- an international nongovernmental organization for investigating man's prospects on the basis of modern tendencies in the development of capitalism.

1971. The book by Prof. J. Forrester (United States), "World Dynamics," is published. In the author's opinion, at the beginning of the 21st century there will be worldwide catastrophes -- the result of pollution of the environment, the exhaustion of natural resources and the consequences of the demographic explosion in developing countries.

1972. The first report to the "Roman Club" -- "Limits of Growth." The leader is Prof. D. L. Meadows (United States). The authors wrote about the exponentially growing numbers of population and the exhaustion of natural resources within 50-100 years. In order to save mankind, it was suggested that the growth of the population and production be halted.

1974. The second report to the "Roman Club" -- "Mankind at the Turning Point." The leaders were Prof. M. Mesarovich (United States) and Prof. E. Pestel (FRG). In order to avert imminent catastrophes related to the lack of uniformity in the development of individual parts of the world economy, it was recommended that they slow down the economic growth of developing countries and actually increase their technological dependency on the industrial centers of imperialism. The official representatives of the developing countries at the U.N. Conference on Trade and Development in 1976 criticized such recommendations.

1974. In a special session the U. N. General Assembly adopted a Declaration and Program of Action for establishing a new international economic policy. While reflecting the concept of young, politically independent states, the Program earmarked:

complete national sovereignty over national resources and all kinds of economic activity;

reform of the international currency system;

industrialization of developing countries;

a more fair ratio between prices for raw material and industrial products;

the delivery of advanced technology to developing countries;

limitation of the activity of international monopolies.

1976. A group of U. N. experts headed by V. Leontev (United States) published the plan, "The Future of the World Economy." In developing the plan they used an economic-mathematical model of the world economy and created eight arbitrary scenarios of the development of the world up to the years 1990 and 2000. In order to reduce the differences in the levels of economic development, it was suggested that they reduce the rates of economic growth of industrial countries and sharply increase them for developing countries. In the opinion of the authors, global problems can be solved with international economic cooperation, the implementation of a number of reforms, acceleration of scientific and technical progress, and increased financial expenditures.

1976. G. Kan (United States) et. al., "The Next 200 Years. Scenarios for America and for the World." Polemizing with the "Roman Club," the authors asserted that in the future more and more countries would be Americanized, and that this process would spread to space where the United States would be building colonies. The society would be changed over to a postindustrial economy, with a typically idle way of life.

1976. The third report to the "Roman Club" -- "The Transformation of International Politics." The purpose of the work, which was prepared under the leadership of Ya. Tinbergen (Holland), is to make the program of the struggle of the developing countries for a new international economic policy less harshly anti-imperialistic. In particular, in solving the food problem, special hopes were placed in the "green revolution" -- scientific and technical improvement of agricultural production. It publicized the idea of "humanistic socialism," which in fact amounted to publicizing bourgeois reformism. It was suggested that incomes be redistributed in favor of the poor, developing countries, and also that a world treasury be created. Questions were raised concerning limitation of the sovereignty of the states over the exploitation of mineral resources in their countries and the development of a "Code of Behavior for the TNC" (transnational corporation).

1977. Under the leadership of E. Laslo (United States) they developed the report "Global Goals and World Solidarity. A Project for the 'Roman Club' Concerning Man's Qualities." Denying the difference in social positions in solving world economic problems and relying on individual conscience, assumed that the development of the corresponding psychological qualities could lead to a radical restructuring of the material conditions for modern civilization.

1977. The summary of the reports to the "Roman Club" under the overall title, "The Goals of Mankind." The leader was E. Laslo (United States). The project is a conglomerate of various materials whose content is frequently incompatible, which was prepared by representatives of many countries, including socialist ones. In the opinion of the bourgeois group of authors, the conditions for solving global problems are "worldwide solidarity," improvement of "human qualities," and so forth. They exaggerated the role of religion in the development of society.

1979. The sixth report to the "Roman Club" -- "There Are No Limits to the Ability to Learn." In the words of the president of the "Roman Club," A. Peccei (Italy), for a radical improvement of human qualities it is necessary to improve the system of training and education: this will give mankind the opportunity to survive and develop, overcoming the internal limits on growth which lie in the nature of man himself.

1979. Terri de Montbrial (France). "Energy: Reciprocal Account." Report to the "Roman Club." The author predicted the appearance of another energy crisis in 1990.

1980. M. Gernier (France). Report to the "Roman Club" -- "The Third World: Three-Fourths of the World." Noting the aggravation of economic problems of developing countries, the author called upon them to adopt the experience of the European Economic Community in their regions.

1980. Report to the "Roman Club" -- "Dialogue About Wealth and Well-Being. Alternative Views on the Accumulation of Capital in the World." Leader -- O. Giarini (Italy). In the report an attempt is made to camouflage the inequality of countries in education and distribution of wealth in the capitalist world. Here there is a mixing up of wealth in value and in physical-substantial (natural) forms. Contrary to the national interests of the peoples, it publicized the idea that natural resources are the common heritage of mankind.

1980. The tenth report to the "Roman Club." From the standpoint of the theory of convergence, the report analyzed the possibility of bringing the opposing social systems closer together. In so doing, it idealized the methods of state-monopolistic regulation of the economy, especially in Sweden, and demonstrated the possibility of the appearance of private property in agriculture, local industry and the sphere of services in socialist countries.

1982. The eleventh report to the "Roman Club" -- "Micro-Electronics and Society: For Better or Worse." A. Peccei (Italy) and his coauthors made one more attempt to revive the bourgeois-reformist idea of another industrial revolution, which would transform the capitalist society with the help of microprocessors and robots.

Such are the main facts presented in the book of V. V. Motylev which characterize the content of bourgeois predictions concerning the world economy. Knowledge of these facts makes it possible to judge what bourgeois economists are afraid of and what they hope for. This is necessary in order to increase the effectiveness of the ideological struggle and to step up our

efforts for the development of our socialist economy. With which parts of these predictions do Soviet economists disagree? V. V. Motylev answers this question as well.

The principal unacceptability of bourgeois predictions is explained by their class character. The two world systems -- capitalist and socialist -- cannot be regarded as identical parts of a unified system which is governed by the same laws. It is impossible to remove from capitalism the blame for the aggravation of social problems. There is no reason to assume that capitalism and socialism will come closer together along the paths of convergence.

The instability of bourgeois predictions is caused also by the attempt to replace socio-economic problems with technological ones. In the projects of the group of M. Mesarovich and E. Pestel nothing is said about the socio-economic reforms that are so urgently needed in developing countries, particularly the agrarian reform, which would essentially change conditions for solving the food problem. Nor is it possible to give a realistic prediction if one ignores the inevitability of cyclical and structural crises of capitalism which are not eliminated with the various variants of state-monopolistic regulation. When predicting the appearance of the mythical postindustrial society, G. Kan and his group try to deny the decisive role of material production in the development of the society and the decisive role of property in characterizing the social structure.

Predictions made by bourgeois liberal economists (M. Gernier, V. Leontev) are more realistic because they utilize more precise methods of calculation, but even in these cases the authors of the projects are far from a classical analysis of socio-economic problems. They do not pay attention to the fact that in wealthy capitalist countries there are many poor people, and in poor developing countries the feudals and bourgeoisie live in luxury. The direction of the proposed agrarian reforms does not correspond to the interests of the peasantry -- which comprises most of the population of developing countries. Striving for a social compromise, these authors (Ya. Tinbergen) actually propose a restructuring of international economic relations which would be advantageous for the monopolies of the West. Attempts to underrate the acuteness of the friction and conflicts within the European Economic Community and in the capitalist world as a whole do not correspond to the real situation. Hopes of creating a "world government" which would "control" the economy in the interests of capitalism are clearly utopian.

The dreams of bourgeois sociologists (A. Peccei, E. Laslo and others) concerning the development of psychological qualities of people as a basis for a radical restructuring of the material conditions for the life of the society are idealistic and subjective in nature. In reality, things are quite the opposite: a revolutionary elimination of the economic conditions of the old system or consistent improvement of the socialist system comprise the material basis for extensive formation of human qualities which correspond to the urgent needs of social progress.

Bourgeois theories of convergence have been examined repeatedly and thoroughly

in Soviet literature. The new materials of the "Roman Club" show that bourgeois economists are exerting additional efforts to resuscitate these theories. They are relying on a "correction" of the vices of private entrepreneurship and the state-monopolistic complex, on the "erosion" of socialism and the restoration of private property, a rejection of centralized planning, and a changeover to models of "market socialism." The actual development of the opposing socio-economic systems gives the most convincing evidence of the lack of justification for these kinds of predictions.

The Soviet Union is prepared for international cooperation in solving global problems. When determining the basic directions for the economic and social development of the USSR during 1981-1985 and the period up to 1990, the 26th CPSU Congress set the following task: "To participate actively in solving international problems in the areas of raw materials, fuel and energy, foodstuffs, environmental protection, peaceful mastery of space, utilization of the resources of the world oceans, and improvement of international economic relations on a fair and equal basis. A refusal to increase armaments, the overcoming of the desire of transnational companies to have a dictatorship in international economic relations, socio-economic reforms and transformations in agriculture and other branches of public production in developing countries, and the utilization of the achievements of the scientific and technical revolution in the interests of man -- these measures are quite realistic and they would create more favorable conditions for the steady development of mankind. The Soviet Union has been consistently in favor of precisely this approach to solving global problems.

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## QUESTIONS TO QUIZ ON COMRADES' COURTS

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 84 pp 203-204

[Text] 1. Comrades' courts can be organized according to production and according to territory -- depending on the place of employment (training) and the place of residence. In what size of collectives is it recommended that they be created?

2. Comrades' courts are granted the authority to examine a broad range of cases and to take various measures of public influence against violators. What is the list of these cases like?

3. Every worker plays a minimum of two roles -- a member of the collective of his place of employment and of his place of residence. Who determines the comrades' court in which legal violations are to be tried: at work or at the place of residence?

4. Members of comrades' courts can be given incentives for active work. What are the forms of these incentives?

5. A worker has committed a production error but is not willing to agree that it was his fault, and thus he is not willing to make compensation for the damage. The foreman has testified against him in the comrades' court. Has the foreman acted correctly?

6. Guided in general by good motives, but at the same time not wishing to turn a worker in to the police for minor misbehavior on the territory of the plant, the board has decided to bring his case before the comrades' court. Do they have the right to do this?

7. The competence of comrades' courts includes trying cases of petty theft of state and public property. What is regarded as petty theft?

8. The comrades' court obtains excerpts from the minutes of the trade union committee concerning to transfer to it of the corresponding materials and the materials themselves, for example, documents concerning damaging of equipment as a result of the carelessness of a worker who has been called to account;

statements from members of the collective; considerations expressed by officials, and so forth. What should the court do if it does not have such materials? Should the court try to obtain them?

9. Certain violators do not consider it necessary to appear at an open session, thus showing that they do not have enough respect for the comrades' court. What should be done in this case? Should the court not go to the police beforehand with a compulsory summons?

10. If a case has reached the comrades' court this means that it has gone quite far. Can the court be dismissed without taking any measure of influence at all?

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EXCERPT FROM BOOK ON TELEPHONE COMMUNICATIONS

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 84 pp 205-214

[Review by V. G. Rubenchik of the book by B. Volgin, "Pomogite telefonu" [Help the Telephone], 2d ed, revised and supplemented, Moscow, "Radio i svyaz'", 1983, 168 pages]

[Text] The telephone at work has rung. What should one do?

What do you mean? Pick up the receiver! Yes, but should one always pick it up? When should it be answered? Who should answer it? Who has the first word and who the last?...

Enough! Is it worthwhile to engage in such trivia? It seems to us that it is. There are two things to consider here. The first thing is that the detachment of 42 million employees and intelligentsia in various branches of the national economy, science, culture and the sphere of services for our country spend from 4 to 27 percent of their working time in telephone conversations. The second this is that the telephone is one of the main means of irritation of the psyche during work. The ability to use the telephone consists in maximally realizing the opportunities it offers and at the same time reducing to a minimum the harm from telephone conversations to other work processes. The art of telephone communication, and, above all, business conversations, can and should be learned, for it has become an indispensable element in the business qualities of the worker.

In order to correct the shortcomings in the work style, there is some point in checking up on one's own telephone conversations.

Should You Answer?

... You are working on an urgent paper, giving it your utmost concentration. You have completely tuned out from the outside world. And suddenly -- the ring of the telephone. You try not to notice this ring, to push it out of your awareness, but it does not disappear, and it begins to confuse your thought ... A test of restraint begins. You try to write, gritting your teeth. But there is that bell in your ears... You are not writing anything,

furiously waiting until it stops, and finally you cannot hold out any longer and you pick up the receiver: "Yes, hello, hello! What is it?!" You have lost your stride in your work, the completion of the urgent business is delayed, and you have been impolite to the other person on the line.

In this situation, both extremes are better than the variant just presented. Either do not answer it at all, or answer it and say politely: "Be so kind as to call me at such-and-such a time. I am busy with urgent work." If even this brief dialogue has a severely disturbing effect on you, it is best to move farther away from the telephone.

But what if your desk is in a common room and there are several other workers there, but just one telephone?

Who Should Answer the Telephone?

One encounters various variants of the location for the telephone. Most frequently it is on the desk of the person with the senior position. The hierarchy is observed, but he has hardly any chance to get any work done. Perhaps the only factor which justifies this location is that this worker has more telephone conversations than the others do.

The opposite variant: the telephone is on the desk of the person with the most junior position. This policy probably makes sense in cases where the ranges of positions of the workers in the room is great enough -- say, from head engineer to technician or laboratory assistant.

But sooner or later this worker will rebel and refuse to answer the telephone. From this moment the telephone will be ownerless. Sometimes it is even moved to a stand or table that does not belong to anybody. This is the third variant for the location of the telephone. Now the handling of it is disorderly. Sometimes two or three people approach it at once, especially before holidays. At other times (and this is much more frequent) nobody will get up, even though everybody has stopped working and they are all looking at one another expectantly.

The fourth variant is more fair here: placing the telephone on each desk by turns. This spreads the burden of answering the telephone out to everyone and relieves the nervousness that fills the room each time the telephone rings. But then a worker answers the telephone and you are upset to learn that he has not mastered --

The Art of Speaking in a Low Voice

It is frequently the case that a person who has just had a quiet conversation in the room with his coworkers, when he picks up the telephone begins to shout into it. The coworkers wait patiently. A sense of delicacy prevents them from interrupting him and expressing their vexation. All work in the office has been abandoned.

Many people raise their voices when they themselves are having a hard time hearing the person with whom they are speaking. This is a phenomenon which is not subject to logic. In such cases you must not raise your voice yourself, but ask the other person to speak louder and at the same time ask if he can hear you well. And so you pick up the telephone and in a restrained voice say --

### The First Word

The most widespread variants of the response are "Yes," "Hello" and "I am listening." Specialists in scientific organization of labor recommend replacing these with informative responses: "Petrun'kin," "Division 17," or "Polyclinic." Even if the informative response is appreciably longer than "Hello," this is more than made up for by the elimination of errors and confusion, that is, time is saved in the long run. Moreover, combining a response with information as to who has answered the telephone sets a businesslike tone for the conversation. But what if you call the person sitting at the next desk to the telephone? It would seem that there would be no stumbling stones in knowing --

### How to Call a Colleague to the Telephone?

Your ideal participation in the conversation is two short phrases: "Just a minute ... Sergey Afanas'yevich, it is for you!" Then you place the receiver on the desk next to the telephone, carefully, without letting it drop, and you return to work. But in this simple act you reveal how cultured your behavior is. This lies in nuances, in trivia, in shadings. Here are some examples of how not to do it.

1. Too much chit chat is inappropriate for business ("Hello! ...One moment, I'll call him right away. You picked a very good time to call, he happens to be at this desk ... He's coming right now ... It was nothing ... I am handing the receiver to Sergey Afanas'yevich").
2. Blind "flirting" without taking into account the circumstance that the other person might not be in a playful mood at all, and a work position is no place for such conversations ("Sergey Afanas'yevich! But do you really need to talk to him? Perhaps it just seems that way to you? Won't I do just as well? ...").
3. A clarification of who is calling. If this is not done according to instructions it can be a tactless violation of the rules of behavior.
4. A disclosure of unfriendly personal relations with a colleague, emphasized by a dry tone and a negligent attitude toward the caller, whom most frequently you do not know.
5. Calling coworkers to the telephone very loudly, directly into the mouthpiece of the phone. Spare the hearing organs and the nervous systems of your callers!

Instead of calling your colleague to the phone, frequently you will have to

Give the Information that the Colleague is Absent

... Again -- for the nth time -- a worker who is absent has another call. Frowning with dissatisfaction, you respond sharply: "He is not here!" and immediately slam down the receiver. By the very briefness of your response and your tone you let it be understood that one cannot keep calling and bothering a busy person.

But let us think about this -- by your answer are not you yourself asking for more calls? What does it mean: "He is not here?" Has he left the room for a cigarette, or has he gone to a business conference lasting an hour or an hour and a half, or is he ill with the flu, or has he gone on vacation? The caller most likely knows nothing about this. And you do know. So inform the caller! You will be able to work more peacefully.

The optimal answer is approximately this: "He is not here. He will be here at such-and-such a time. Can I give him a message?" And if they really do ask you to tell him something, do not fail to write a note at once and place it on your colleague's desk. Do not rely on your memory, for it frequently lets you down.

The main rule: do not assume that people call your colleague only about trivia (even if this happens). Take each telephone call seriously, and respect your colleagues.

Up to this point we have considered situations in which people have called you. But you yourself make calls on the work telephone.

How Do You Find the Number You Need?

At your service are your memory, a notebook, a page of a calendar, assistance from your coworkers, a telephone book and information. Which do you prefer?

Our advice is to write down telephone numbers! Write them down, making sure to enter the last names, surnames and patronymics, the institutions, or the specific matters about which you might call these people. Here are a couple of simple rules.

Do not detain the person you are calling and make an initial note on your calendar or a sheet of paper. At your first opportunity transfer this note to where it should be.

Do not be afraid to duplicate your notes on the calendar and in your notebook: as a rule, duplicate notes save you time.

Any telephone number which you know you will use more than two or three times should be entered in a notebook.

Twice a year you should leaf through your notebook and underline the numbers you use the most (do this with a colored pencil so that you can read through them quickly if necessary).

Replace your notebook every year or two, but do not throw the old ones away.

Now that your telephone notes have been put in order, you can call the person you need to talk to without any difficulty.

Be Concerned About the Person With Whom You Are Speaking!

For important telephone calls (to the management, very important people, or to other cities) it is useful to jot down beforehand on a sheet of paper the main points of the forthcoming conversation so as not to forget individual important points in your haste or agitation.

And what time is best to call? There is a natural desire not to bother a busy person with your call. If you do not know at what time he is especially busy, the most common advice is this: try not to bother people with phone calls in the first half of the day, when a person who is concentrating can be most successful at solving his most important problems. Do not break his work rhythm.

In response to your call, at the other end of the line you hear "Hello."

What Are Your First Words?

The etiquette of telephone communication prescribes that you always identify yourself before beginning a conversation, even if you presume that the person will recognize your voice. Nevertheless, when the receiver is picked up the caller frequently hears: "Who is this?" People react to such an "introduction" in various ways. Mild-mannered people ask, in turn: "Who is calling?" People who are not as easy to get along with hang up without saying anything.

To be able to make calls is a difficult concept, which includes not only being able to dial the number and hold a conversation, but also to be able the "get through" to the right person on the telephone.

Are You Able to Get the Right Person to Answer?

A very effective method of doing this is to call the number continuously time after time, without pausing if possible. When it is necessary to talk not with one but with several other people, the method of regular calls is expedient. At the beginning of the day you write on a sheet of paper the names and telephone numbers of all the people with whom you have to get in contact today. Then you begin to call through the list. If the next person is busy or does not answer, you go to the next number. The hygiene of mental labor requires a short break after each hour of work. Therefore after approximately an hour you take up the list and go through it from top to bottom.

## And If You Have a Secretary?

As an analysis of the time expenditures of machine building plant directors shows,\* the duration of their telephone conversations comprises an average of 11 percent of their working time, and it reaches 27 percent for individual workers. And it is not just a matter of the amounts of these time expenditures. They break up working time into short segments, sometimes of 5 or 10 minutes. In essence one forfeits the possibility of creative work which requires peaceful and methodical thinking. The most effective way of easing the burden of telephone conversations is to have "protection" in the form of a secretary.

A professional secretary not only types, files and keeps things in order, but he is also able to speak on the telephone. He clearly remembers the people and organizations with whom the manager is to be in contact at any particular time. Moreover, the secretary has an idea of the problems which are within the competence of the manager and other workers of the institution, and he can refer the caller to the proper worker.

The rules by which a secretary conducts a business conversation are well formulated in the brochure entitled "The Secretary of the Institution" (Moscow, Ekonomika, 1973, pp 63-66).

Let us add to them one more thing: all conversations should be conducted in a pleasant tone. Even if the answer is precise and complete, if it is presented in a rude, tactless form, it can cause harm which is difficult to estimate and which will subsequently be reflected in the essence of the matter.

The telephone is very convenient for transmitting and receiving emergency information, and therefore it is necessary to teach the secretaries and other workers to fill out telephonograms -- official communications transmitted over the telephone. It is good if the institutions acquire special blanks, like the one below, for example.

Recording telephonograms is accelerated and becomes mistake-free if a dictaphone is hooked up to the telephone network. A "telephone-dictaphone" in tandem is very attractive, although it is still underestimated in business circles. We can refer people who are interested in delving more deeply into this subject to an interesting book by K. Barikin, "Pishu, pechatayu, diktuyu..." [I Write, I Type, I Dictate ...] (Moscow, Politizdat, 1979).

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\* Konovalov, V. N., Litvinova, A. A., "An Analysis of the Labor of Managers of Enterprises in Order to Increase Their Efficiency" (experiment in the city and oblast of Sverdlovsk) in the book "NOT inzhenerno-tekhnicheskikh rabotnikov" [Scientific Organization of the Labor of Engineering and Technical Personnel], Moscow, 1968.



Telephonogram			
Name of addressee		Name of addressee	
No _____	Date _____	No _____	Date _____
Time of call _____ hr. _____ min.		Time of call _____ hr. _____ min.	
Sent		Received	
TEXT			
			Signature _____

The method of installing two telephones in the manager's office has proved to be good. One of them is for calls that go through the secretary, and the other is his private line. The number of his private line is given to only a small group of people whom he knows will not abuse the boss's working time.

Our task is clear: to learn to utilize telephone communications effectively. There is one general piece of advice: be polite and tactful, and be concerned about those around you. And this concern will return to you like a boomerang, and will have a favorable effect on your mood and ability to work.

#### Scope and Prospects

In the world today there is one telephone for every 7-8 people (600 million telephones and 4.5 billion people on earth). But they are not distributed uniformly. While in the United States and Canada there is one telephone for every two residents, in the FRG, France, Great Britain and Japan there is one for every five residents. In the developing countries there are many times fewer.

The scope of the use of telephones is determined not so much by the number of telephones as by the intensiveness of their utilization. For example, in the FRG there are 200 telephone conversations per year per capita, that is, about three conversations a day for each telephone. In the United States and Canada there are more than four and a half conversations a day (1,700 conversations a year). In our country the intensiveness of the utilization of telephones is considerably greater.

In Russia the first city telephone line with a distance of 1,550 meters was put into operation on 8 June 1881 in Nizhniy Novgorod. In 1882 city telephone exchanges were constructed in Petersburg, Moscow (with 200 numbers), Odessa, Riga and Warsaw. Telephone communications between Moscow and Petersburg (660 kilometers) were arranged in 1898.

In 1990 Moscow will have 3.5 million telephones, that is, a telephone in each apartment.

As early as the 8th Five-Year Plan construction was completed on a transcontinental multichannel cable telephone line between Japan, the USSR and Western Europe, which closed the circle of the waterways around the world.

According to predictions of specialists, by the year 2000 from every telephone there will be automatic communications with any country and any population point in the world.

The scale of the use of telephones can be seen clearly from the table:

Year	1940	1950	1960	1970	1975	1980	1981
Overall number of telephones in urban and rural telephone networks, millions	1.7	2.3	4.3	11	17.2	23.7	25.2
Including automatic	0.4	0.9	2.2	9.5	16.1	23.1	24.6

Telephone lines are even appearing in unpopulated places. They are used as new power sources. In the desert and arid central regions of Australia in 1979 they put into operation a unique telephone network with more 500 kilometers of lines. All of its electric energy is provided by solar batteries.

The progress of technology in our day has not bypassed the telephone. In a number of cases there is no longer any need to lay costly cable lines -- telephone conversations are translated through communications satellites, and tens of thousands of conversations can pass through one satellite at the same time. Over short distances they use optical communications lines, which have high resistance to interference and greater density of the information that is transmitted. For example, such a network is being planned for service for the Olympic games in Los Angeles.

Telephone lines provide communications not only between people, but also between computers. Through telephone lines computers are joined together into a network, which brings about a sharp increase in the effectiveness of their use. Through a telephone from a small laboratory one can obtain access to an immense supercomputer, which may even be located in another country. With the help of a telephone one can also use information banks which are stored in the memories of computers in other cities.

Our private telephones are also becoming much more convenient. The push buttons save a lot of time as compared to dialing. The microcomputer installed in the telephone will serve as a notebook and a secretary -- at the appropriate time the telephone itself will dial the necessary number, and redial it if the party does not answer. Equipment like this can already be found on the counters of our stores. If you are not available, a telephone that is connected to a tape recorder will record messages, and so forth. A miniature receiver and transmitter installed on the mouthpiece of the

telephone make it possible to get rid of the cord: you can walk around freely in the room with the telephone in your hand.

With the help of telephone communications lines there are plans to create information networks which connect residential buildings, libraries, hospitals, stores and industrial enterprises. Right from your own home you can see on the television screen a page of a book from the library, an old film, the latest news of your choice, you will be able to obtain information about goods in the stores, theater performances, and so forth. They are planning to begin the creation of such a national system in Japan in the near future. Work is being done in this area in the USSR as well.

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## ANSWERS TO QUIZ ON COMRADES' COURTS

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 84 pp 215-216

[Text] 1. It is recommended that the public agencies under consideration here be organized in collectives of no less than 50 people. In certain cases, with the agreement of the higher trade union agency or the ispolkom of the corresponding local soviet of the council, this number can be less.

2. The comrades' court has the right to try the following kinds of cases, which are determined by the provisions: concerning violations of labor discipline; concerning administrative legal violations; concerning minor offenses; concerning property and other civil disputes; concerning amoral acts; and concerning violations of laws of socialist communal living.

3. The comrades' court -- production or territorial -- in which a particular case is to be tried is determined by the individual (agency) which is authorized to bring the case to the comrades' court. The selection depends largely on the concrete circumstances of the case. In practice, preference is usually given to production comrades' courts.

4. Members of comrades' courts can be given incentives for active work by the ispolkom of the corresponding soviet of people's deputies, trade union committee or, at their discretion, the administration of the enterprise. Forms of incentives: declarations of gratitude, awarding of the Certificate of Honor, valuable gifts or monetary bonuses, the granting of additional paid vacation for a period of up to 3 days, preferential passes to sanitoriums or houses of recreation, and so forth.

5. The comrades' court can consider the statement of the foreman and condemn the worker for poor work performance. Disputes between the worker and the administration with reimbursement to the enterprise for material damage are not heard by the comrades' courts.

6. Minor misbehavior is included among administrative legal violations which are tried by the comrades' courts. Work comrades have the right to go to the comrades' court regarding minor misbehavior on the part of their colleagues. The court may try such a case.

7. Misbehavior involving a sum of up to 50 rubles is regarded as minor.
8. If the materials submitted by the trade union committee are not complete enough, the comrades' court is not relieved of its responsibility to accept them, and it should consider the expediency of checking and augmenting them.
9. One may fail to appear in court if he has a good reason; without one the guilty person is warned that if he fails to appear again without a good excuse his case will be tried without him. A compulsory summons is not appropriate for these people who fail to appear in court.
10. If the guilty party is honestly sorry, apologizes publicly to the collective or voluntarily makes reimbursement for the harm he has caused, the comrades' court can limit itself to a public trial of the case and not take punitive measures against him. The comrades' court can exonerate the person who has been brought to trial if there is no justification for a conviction.

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## READERS MEETING WITH MAGAZINE REPRESENTATIVES IN VILNIUS

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 84 pp 217-219

[Article by G. Pyatakov, docent (Vilnius): "Meeting With Readers in Lithuanian Capital"]

[Text] Authors and readers are seeking closer contacts with the magazine's editorial staff. In many cities of the country these searches have brought about readers' conferences and the organization of clubs of friends of EKO. Such a conference was held in Vilnius. More than 160 people from 86 organizations of the city participated in it.

The conference was opened by the deputy director of the Institute for Raising Qualifications of Specialists in the National Economy of the Lithuanian SSR (IPKSNKh), Prof. P. Kul'vets. He noted that everything is recognized in comparison, but EKO (like, incidentally, other magazines) publishes almost no comparative statistical data concerning the economies of our country and other countries, especially in terms of such important indicators as labor productivity and science-, labor- and material-intensiveness.

Prof. K. Antanavichyus from the engineering and construction institute thinks that the tasks of the economics press are no less responsible than those of economic science. Poor work is frequently explained not by the fact that the individual does not want to work well, but by the fact that the necessary economic and organizational conditions have not been created, which would provide incentive for high-quality, productive labor, initiative and enterprisingness. It is necessary to have an in-depth economic analysis in the press, which would include the question of the balance of plans and the utilization of commodity and monetary relations. But such issues have been rarely raised in the magazine and they have been purely local in nature.

S. Machulis, chief of the division for economic research of the All-Union Scientific Research Institute of Thermal Insulation, gave a positive evaluation to the articles in EKO which reflect advanced practice -- not only domestic, but also that of other industrially developed countries of the world. Speaking about the problems which he recommends for consideration in the magazine, the speaker noted that an important one is the arrangement of

effective ties among enterprises within the republic. Since many enterprises are under the jurisdiction of all-union ministries, sometimes problems which could be resolved within the republic are taken to the unionwide arena, and this increases both the time lag and economic expenditures as a whole.

D. Kuzmitskas, candidate of economic sciences, shop chief of the "Fuel Equipment" plant, discussed the fact that the exchange of opinions practiced by the magazine is of real assistance in improving the content and style of the work of the manager and causes him to think about and analyze various aspects of his activity. Criticizing the editorial staff, the speaker noted that not enough space is devoted to the problem of organizing brigade forms of labor. There are incorrect trends in their dissemination. Expansion of purely formal "encompassing" by the brigade form gives rise to negative attitudes toward it.

The docent R. Razaukas, department head of Tartu University, noted that the most valuable thing for VUZes in EKO are the attempts not simply to criticize, but to learn to think critically, to develop the manager's method of thinking. The main problems of the day, in the opinion of the speaker, are problems of scientific and technical progress and production management, stepping up people's labor activity, and solving ecological problems. The mass reader is less in need of material of a local nature. Articles about the advanced experience of managers are very valuable.

A. Indryunas, a dean of the IPKSNKh, thinks that the magazine's main goal is to develop modern economic thinking on the part of the workers. Nontrivial, creative solutions are important today as never before, but it is necessary to form public opinion in order to carry them out.

The docent A. Koindrashka from the republic Higher Party School noted that many articles that appear in EKO are used in the training process. Students learn their economic approach primarily from these articles. But the magazine could be more effective, and the analysis of the changing economic situation frequently appears too late in the articles.

I. Rudokas, the chief of the bureau of the head technologist's division of the Sigma production association, emphasized that EKO is read not only by managers, but also by rank-and-file workers. Therefore there could be a larger proportion of materials on problems of daily organization of production.

M. Lobikov, director of the republic center for scientific organization of labor and management, recommended devoting more attention to economic analysis of medium-sized and small enterprises and publishing business games for training managers. In her opinion, one should in all ways support the idea of consultation points for managers of various levels.

O. Den'kovskaya, senior economist of the Lithuanian SSR State Committee for Labor and Wages, wished that the magazine could be a companion for readers not only in production activity, but also during hours of rest by expanding the publication of materials that are more entertaining.

A member of the EKO board and deputy director of the Institute of Economics and Organization of Industrial Production, Doctor of Economic Sciences A. G. Granberg, gave information about the magazine's long-range plan and answered questions.

At the conference it was decided to create a club of friends of the magazine in Vilnius as a subdivision of the republic economics society. There were 60 applications for membership in this club. In addition to the areas of work known from the experience of other clubs, here they plan to assist in consultation on problems of organization and administration at enterprises of the republic, supervision of large economic experiments, enlistment of students into economic life, and dissemination of economic knowledge among school children.

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